CHANGING POLITICAL CLIMATES: CHINESE ENVIRONMENTAL JOURNALISM AND SUSTAINABLE DEVELOPMENT

A thesis submitted to the University of Manchester for the degree of Doctor of Philosophy in the Faculty of Humanities.

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ABSTRACT

The phenomenon of human-caused climate change releases a "cosmopolitan imperative" (Beck 2010, 258) that demands cooperation across boundaries: national, scalar, temporal, epistemological and ontological (cf. Hulme 2010, Urry 2011). However, many of the approaches taken today only reinforce such distinctions: for example, by insisting on a universal scientific understanding of climate change as a basis for policy (Jasanoff 2010a). In the People's Republic of China, the world's largest emitter of carbon dioxide (PBL Netherlands Environmental Assessment Agency 2007), the new leadership has made "Beautiful China" and "Ecological Civilization" two of their most prominent official slogans and enshrined sustainable development as core state policy (Geall 2012, Geall and Hilton 2014). This drive for "low-carbon development," like climate change more broadly, reveals a set of social, ecological and political concerns with interlocking, complex and uncertain dynamics. How we frame incomplete knowledge about such dynamic systems affects the political approaches that are taken to sustainability (Rittel and Webber 1973, Leach, Scoones and Stirling 2010). This dissertation uses ethnographic methods to investigate how Chinese environmental journalists make framing decisions around the science and politics of climate change. This reveals how reporters can find spaces for political engagement in a restrictive and changeable media and governance environment, one that not only reflects a changing history of attitudes towards the environment in China, but also an international arena dominated by technocratic and managerial approaches to sustainability. It finds that Chinese journalists have found sophisticated ways to map the complex interactions of human and natural systems presented by climate change – and have addressed uncertainties in a fashion that points towards more open and plural pathways to sustainability.

Declaration
No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

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Glossary of commonly used abbreviations

CCICED: China Council on International Cooperation on Environment and Development, an influential think-tank under China's State Council.

CBDR: Common but differentiated responsibilities, a principle codified by the UN in 1992, which says that "In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities."

CCTV: China Central Television, China's main state broadcaster.

CDM: Clean Development Mechanism, one of the mechanisms that allows for carbon emissions trading under the Kyoto Protocol.

CRU: Climatic Research Unit, a leading climate research institution at the University of East Anglia, UK.

COP15: The 15th Conference of the Parties under the UNFCCC, held in December 2009 in Copenhagen, to decide a successor deal to the Kyoto Protocol.

EIA: Environmental Impact Assessments, as codified in China's 2002 EIA law.

FON: Friends of Nature, a Chinese green NGO, founded in 1994.

FYP: Five-Year Plan, a centralised and integrated economic plan.

IPCC: Intergovernmental Panel on Climate Change, the top UN scientific body on climate change, which supplies reports for the UNFCCC.

MEP: Ministry of Environmental Protection, China's top environmental regulator. Until 2008, known as SEPA.

MOEI: Measures on Open Environmental Information, a decree based on the OGIR, adopted by the MEP.

MRC: Mekong River Commission, an intergovernmental body to promote regional cooperation along the Mekong River. Includes Cambodia, Laos, Thailand and Vietnam (but not China).

MRV: Measuring, Reporting and Verification, ways of ensuring carbon emissions reductions under UNFCCC mechanisms.

NDRC: National Development and Reform Commission, a top economic planning body in China's central government.

NPC: National People's Congress, China's national legislature, commonly referred to as a "rubber-stamp parliament".

OGIR: Open Government Information Regulations, rules that came into effect in 2008 concerning Chinese government transparency.

SEPA: State Environmental Protection Administration, central government environmental regulator. In 2008, promoted to ministerial level and known as the Ministry of Environmental Protection (MEP).

UNEP: United Nations Environment Programme, UN agency that coordinates its environmental activities.

UNFCCC: United Nations Framework Convention on Climate Change, an international non-binding environmental treaty that provides a framework for negotiating specific international treaties (called "protocols") that can set binding limits on greenhouse gases, such as the Kyoto Protocol, signed in 1997.

WCED: World Commission on Environment and Development, better known as the Brundtland Commission, named after its Chairman Gro Harlem Brundtland, was a report commissioned in 1983 by the UN to rally countries to work and pursue sustainable development together.

Chapter 1: Introductions

"You have to get the politics right before you can get the right science." (Sarewitz 2011, 481)

In 2010, in the offices of the British Council in Beijing, a "carbon marketer" promoted the sale of voluntary carbon offsets to an audience of Chinese journalists. The speech was part of the UK's largest ever trade mission to China, which included the Prime Minister David Cameron. "You are the most important people here," said the young, British trader, "because you will communicate this." The PowerPoint slide showed a drought-stricken village in Gansu province, north-west China. The text read: "Be part of the solution". A young journalist from the business-magazine *Caijing* turned to me quietly and said that she thought carbon trading was about profit, not the environment. Surely a change of economic and political model would be needed for real action on climate change. I looked at my computer, on which I was using a Virtual Private Network to route around the government Internet censorship apparatus commonly known as the "Great Firewall", and read that the same morning as we sat there, in a courtroom in Beijing, Zhao Lianhai, the parent of a child who had been sickened by milk powder tainted with the industrial chemical melamine, was being sentenced to two-and-a-half years in prison. After the major food-safety scandal, which had first come to light in 2008 and caused at least six deaths and serious kidney damage for hundreds of thousands of children, Zhao had used the Internet to campaign for reform of the food-safety system. Shouts and wails erupted outside the courtroom as the 38-year-old man was jailed on charges of "causing a serious disturbance" and "using controversial social issues to gather and incite others to shout slogans in public places and illegally gather to stir up trouble." On hearing the sentence, Zhao had torn off his detainee uniform as he tried to resist being dragged away.

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The People's Republic of China's new generation of leaders has made the quest for a "Beautiful China" and an "Ecological Civilization" two of its most prominent official slogans, as its central planners push towards a prominent national development goal: to create a "moderately well-off society" by 2020. These slogans appear on posters

and banners across China today and accompany an ambitious raft of environmental policy directives, not least those launched under China's 12th Five-Year Plan, the centralised and integrated economic programme for 2011 to 2015 (Geall and Pellissery 2012, Hilton et al 2011). However, as the latest annual review from China's Ministry of Environmental Protection has illustrated, the scale of the challenge is huge. In China's countryside, that report said, the environmental situation is "grim" (McLaughlin 2013). The cities aren't much better, either: in 198 cities inspected last year, more than 57% of the groundwater was rated "bad" or "extremely bad", while more than 30% of the country's major rivers were "polluted" or "seriously polluted". Nor did the air in 86 out of 113 key cities reach air quality standards. In early 2012, heavy smog blanketed more than 1 million square kilometres of China for several days (Ministry of Environmental Protection 2013). In some places, aeroplanes were grounded and roads closed as the haze obscured all but the lowest of buildings. For most people, such gloomy assessments will not have come as a surprise: Chinese citizens' concerns about the environment rose sharply in 2013, according to a Pew Research Centre survey, which found that 47% considered air pollution a "very big problem", up from 36% in 2012. Some 38% thought food safety was a major concern, down slightly from the previous year, but representing a 26 point increase from 2008 (Pew 2013).



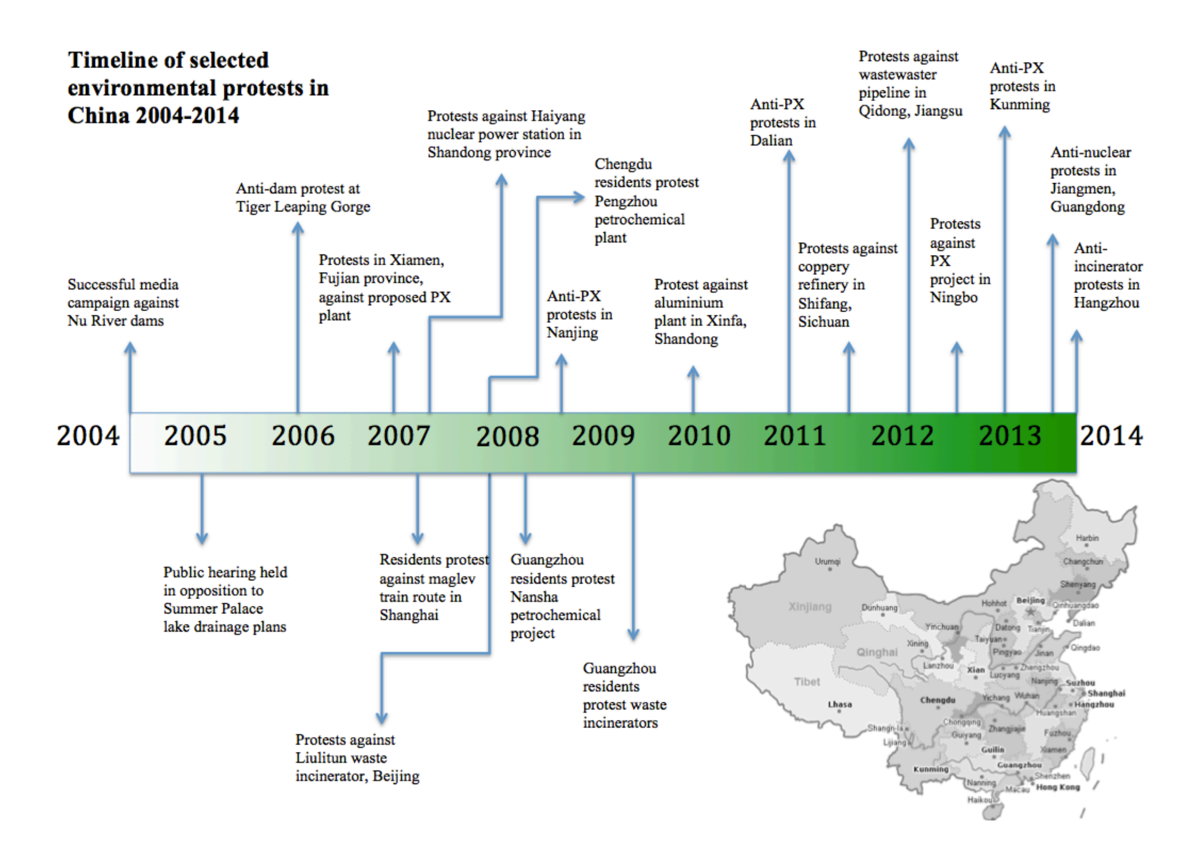
Figure 1. "Participate in environmental protection activities; support Ecological Civilization." Sign in rural Yunnan province, south-western China, July 2009.

Figure 2. "Beautiful China" slogan is explained in a poster in Beijing Capital Airport, October 2013.

However, it is not only visible and immediate environmental problems that concern Chinese citizens: it is often the anticipated effects of pollution that cause controversy (Yang 2013). Senior Chinese government officials admit that fear of polluting projects may have become the nation's single greatest cause of social unrest. Chen Jiping, formerly of the Chinese Communist Party's Committee of Political and Legislative Affairs, said in March 2013 that the country now sees 30,000 to 50,000 so-called "mass incidents" or protests every year (a notably smaller estimate than that from Sun Liping, from Tsinghua University, who estimated there were 180,000 "mass incidents" in 2010 [Orlik 2012]). Of these protests, Chen said: the "major reason for

mass incidents is the environment, and everyone cares about it now." (Bloomberg News 2013) Other studies indicate that the frequency of such environmentally related social incidents has been increasing by 30% every year (CCICED 2013). As Chen put it, "If you want to build a plant, and if the plant may cause cancer, how can people remain calm?" (Bloomberg News 2013) Local authorities in Guangdong province, in southern China, recently bowed to this rising discontent when they cancelled the construction of a US$6-billion uranium processing plant, after hundreds of protesters took to the streets, having organised the demonstrations online via social media websites and messaging services. Since 2007, a succession of so-called "not in my backyard" protests have opposed potentially polluting industrial facilities. The first major such uprising focused on the proposed construction of a petrochemical plant manufacturing paraxylene, or PX, in Xiamen, in south-eastern China (see Chapter 2). Since then, protests have halted many more: another PX plant in Dalian, north-eastern China, a copper and molybdenum refinery in Shifang, in the west, and incinerators in Panyu, in Guangzhou, and Xierqi, in Beijing, to name only a few (CCICED 2013).

Concurrently, the possible future effects of human-caused climate change have also risen up the agenda as a meta-environmental issue in China, intricately related to a number of other complex concerns, ecological, social, political and economic. Climate change poses real, if uncertain, incompletely understood and unpredictable threats to people and to ecosystems, but many of the approaches and conceptual tools that have been employed to address it have also encountered unexpected problems and impasses, particularly around the interface of scientific knowledge and public policy, and have repeatedly been exposed to be inadequate. This was evidently the case in 2010 — when the fieldwork for this dissertation was conducted — in the immediate aftermath of not only the apparent "collapse" of UN climate-change talks at Copenhagen in late 2009 (known as COP15), which had aimed to establish a successor for the Kyoto Protocol climate-change treaty that would expire in 2012, but also a number of media "scandals" regarding apparent malpractice in peer review and other practices around the scientific institutions associated with climate change. The document that emerged from COP15, known as the Copenhagen Accord, was widely judged to be a disappointment (cf. Mehra 2010), since it set in place no targets for a UN treaty beyond 2012, apart from a non-binding commitment to keep global warming less than 2 degrees Celsius above the pre-industrial average. The scrutiny



that ensued often focused on China, as the world's largest emitter of carbon dioxide (PBL Netherlands Environmental Assessment Agency 2007) and an apparent obstacle to political consensus around a global treaty (cf. Lynas 2009, Conrad 2012).

At the heart of this conjunction is the fact that climate change is not a structured problem, amenable to the sorts of solutions that have been employed successfully around the world to address the conventional environmental problems mentioned above, such as groundwater contamination, air pollution or even food safety, but is better analysed as a "wicked problem", a term first coined by Rittel and Webber (1973), who used it to describe problems in social policy that could only be defined in relationship to proposed solutions, which were themselves shaped by underlying values. In effect, this means that different people frame the problem and its solution in irreconcilably different ways. "What comprises problem-solution for one," wrote Rittel and Webber (1973, 169), "is problem-generation for another." Such situations pose a problem for technocrats, of course, since wicked problems cannot be "solved" by experts, who as similarly subjective players in what is a "political game" tend to make that game all the more intractable by misunderstanding this aspect of the situation. In short, the wickedness of climate change lies in the interdependencies of its "open, complex and imperfectly understood" (Prins and Rayner 2007, v) social and

ecological systems it affects, meaning one solution “often reveals or creates other, more complex, problems demanding further solutions.” (Hulme 2009a, 334) Yet many of the approaches to climate change currently proposed and operationalised around the world assume linear dynamics, amenable to simple solutions that underplay this complexity (Hoppe, Wesselink and Cairns 2013).

Beck (2010, 258) wrote that climate change is “pure ambivalence” releasing a “cosmopolitan imperative”: in other words, that it demands cooperation across multiple boundaries, including national borders. But such cosmopolitan approaches are rarely found. The boundaries in question are not only political or regional, since climate change destabilises many socially constructed polarities (Urry 2011) – geographical, ontological and epistemological – between local and global, nature and culture, present and future (Hulme 2010). But many of the approaches taken today only reinforce such distinctions, for example, by insisting on a universal scientific understanding of climate change — an approach that favours the epistemological frame to the exclusion of the ontological — as a basis for policy. Scientific conflicts have emerged around climate change, but these not only reflect “different human epistemologies or preferred ways of knowing”, but also implicate “incommensurable practical human-cultural ways of being (ontologies)”: in other words, “cultural confrontations between different, incompatible ontologies.” Dominant narratives, however, continue to understand climate change in terms of “public unwillingness or inability to ‘understand’ scientific knowledge or method” (Leach, Scoones and Wynne 2005, 8).

Such dominant approaches emerge through the underplaying of incertitude, or incomplete knowledge. Rayner has pointed out that uncertainty, an inevitable feature of climate change (also see Chapter 4), has not proven to be a barrier to climate change’s take-up as a public-policy issue (contrary to some people’s expectations). Quite the opposite, since its very plasticity, “its ability to be many things to many people” has ensured “its claim to sustained public attention.” (Rayner 2009, xxi) Incertitude, for Leach, Scoones and Stirling (2010), is made up of various combinations of specific conditions, the framing of which bounds systems and narratives in different ways, implying certain types of responses and action. In other words, the way we frame incomplete knowledge takes on not only a descriptive but

also a normative significance, shaping our approaches to science, politics and "sustainability". For Leach, Scoones and Stirling, powerful actors, institutions and discourses tend to "deploy knowledge as a means to justify, persuade, legitimate [and] very often force a process of 'closing down'" toward a risk-based narrative, where outcomes and probabilities are quantifiable, as opposed to one where uncertainties, ambiguities and ignorance (where "we don't know what we don't know") might be included (Leach, Scoones and Stirling 2010, 78). Such representations of risk — and the "closure of imaginations" (Stirling 2013) — not only impose "presumptive meanings that obscure and disable people's ontologies" but also impose their own, projecting "implicit models of the human, and in that sense are tacitly performative of human ontologies" (Leach, Scoones and Wynne 2005, 42), which means that "particular constructions of the citizen are… imposed through risk discourses", reflecting "real relations of power in national and, increasingly, international contexts." (Leach, Scoones and Wynne 2005, 42)

In other words, as "knowledge can be power, so power tries to shape knowledge" (Stirling 2013), and today, knowledge about climate change has been shaped by powerful scientistic and technocratic discourses that have undermined the autonomy and capability of citizens to respond to its challenge (Lahsen 2005, Hulme 2009a, Swyngedouw 2010). Climate change has become in many respects an expert and elitist discourse in which the voices of many social groups are neglected (Beck 2010, 254-5); discourses surrounding climate change have often been removed from society, culture and the political, with "nature" and the "environment" constructed as categories to be managed by elites, supported by experts (Beck 2010, Leach, Scoones and Stirling 2010, Latour 2008). Where there do exist significant political conflicts over climate change, these are dominated by competing certitudes, which appeal to science as a basis for advocating different policies (Pielke Jr. 2012a, 205). Consequently, awareness of ignorance and uncertainty, key aspects of political approaches that can find compromise and incorporate feedback from experience, is largely absent. As Stirling (2013) has described it, for "all their seductive appeal; concentrated power, expert certainty and fallacies of control remain the oldest enemies," enemies that so far have defeated us in attempts to address climate change.

The approach taken by elite actors in China has increasingly put emphasis on the

framing of climate-change knowledge, particularly through the notion that the "solution" to climate change is to be found in greater communication. In 2013, I attended China's first international conference on climate-change communication, attended by many of China's senior climate-change officials and negotiators. The founder of the climate-change communication centre at Renmin University in Beijing, where the conference was hosted, started the conference with an exhortation that such communication efforts should push forward "green development" by seeking consensus and "coordinating action". People "need to pay attention to climate-change communication," he said, because "it can be a future trend for the world." (Zheng 2013) Commonly known as the "deficit model" (Boykoff 2011, 77), the primary assumption behind such concentrated, top-down communication efforts is that environmental problems can be attributed in part to a lack of scientific awareness among the public and that journalists, by learning more about the science from experts, can supply the information necessary for society to make the correct choices, informed by such a view. Such a model, as it is commonly held by actors in the climate-change arena, is summed up well by Moser in her account of the sentiment at a workshop convening climate-change scientists, campaigners and communicators:

> "If only they [the public] understood how severe the problem is… If only we could explain the science more clearly, train to be better communicators, become more media-savvy… The science of global warming is clear – why are we not acting as a society to combat the problem? Why are they not listening? Why is no one doing anything?" (Moser and Dilling 2007, 3).

The deficit model was first popularised in the 1970s and 1980s in a body of scholarship known as "the public understanding of science". The focus was then on risk perceptions of nuclear power, with people's perceptions typically characterised as subjective and emotional. Such themes were reprised in scholarship about biotechnology in the 1990s, which "assumed that public concerns about GM crops could be founded only on an incorrect understanding of the technology or a complete lack of knowledge altogether." In other words, much of this work focused on "public attitudes," to the exclusion of "underlying sources of social tension, and how these reflected limitations in the risk–regulatory framework itself." (Kearnes, MacNaghten and Wilsdon 2006, 20-21) Furthermore, the deficit model assumed that public culture

could incorporate a "one way flow of knowledge and information" from expert to citizen (Hulme 2009a, 217). This assumption, as will become abundantly clear in this dissertation, inaccurately understands media systems and public culture either in China (cf. Akhavan-Majid 2004, Calhoun and Yang 2007) or elsewhere (cf. Carvalho and Burgess 2005, Boykoff 2011).

However, the deficit model continues to be an accurate description of approaches widely documented among policy, media and advocacy institutions working on "sustainability". Zimmerer (1996, 98-115), for example, has illustrated how, in the Bolivian context, the international responses to the problem of soil erosion were dominated by the promotion of education programmes: Zimmerer found that uneven economic development had pressured peasant farmers to modify land use in soil erosion-inducing ways, curtailing once-common conservation measures due to labour-time constraints. Among peasants there were many sophisticated local understandings of the erosion problem, bound up with religious and supernatural beliefs about an increased frequency of torrential downpours, which spoke to the breakdown of customary rights and obligations in society, and an increase in violence and inequality. Yet in examining the contestation of discourses around soil erosion, Zimmerer found that development institutions had sustained a notion that "peasants haven't developed any awareness about the problems of soil erosion" and had continued to design education programmes as a "solution". The problem, not only for governments, but also for conservation NGOs, was seen to be public "ignorance".

Similarly, this dissertation regards "public attitudes" towards climate change in China as interesting only insofar as they illustrate dominant discourses and epistemologies around science and policy. In China, conflicts over scientific risk and environmental knowledge do not only expose different ways of thinking about science, but also are performative of different constructions of citizenship. Discourses of sustainability, however, have provided citizens with "interpretive knowledge about how the basic institutions of society work and offers tactics for change" (Fischer 2005, 60), thus helping to orient citizens towards "fundamental questions of democratic politics" (Jasanoff 2005, 190): questions about future directions of scientific and technological progress, about who is making the scientific and technological choices that govern human lives. Thus to investigate China's climate-change challenge is to observe

dynamic, complex systems and incomplete knowledge, where powerful forces shape and contest the framing of narratives, but it is also to observe the actors that have attempted nonetheless to create plurality and diversity in the context of closure, to maintain or to open multiple sustainable pathways that do not exclude and marginalise less powerful discourses, actors, institutions and networks – and thus to politicise sustainability.

The central question of this dissertation, therefore, is to ask how and to what extent Chinese climate-change reporters might engage in agonistic politics. Since media do play a significant, if not linear, role in constructing and framing risks, which imply particular approaches to environmental decision-making, when Chinese journalists report about climate change, to what extent might they inevitably reinforce the dominant framing, and therefore assist in the closing down of options around sustainability pathways, or might they also work to introduce uncertainty, plurality and diversity, and might this form part of the politics of opening up? If so, what might this tell us about climate change and sustainability?

In investigating this question, this dissertation does not seek to present a generalisable picture of Chinese journalists, but rather by explicitly focusing on a specific subgroup — the so-called "issue entrepreneur" journalists, or advocate professionals (discussed further in Chapter 3) — and the deep resonances of their engagement with concepts that include science, politics, the environment, risk, uncertainty and citizenship, I hope to contribute not only to the literature on the environmental politics of contemporary China, but also on human responses to climate change as they are understood through public culture — and to lay the foundation for bridging work that might bring together perspectives from social anthropology, China studies and science and technology studies that rarely meet.

On the theoretical level, this dissertation attempts to show how a phenomenon with nonlinear dynamics (climate change) can be drawn upon to look at the multiple realities that come together, travel in parallel and cross and contradict one another in such circumstances. It suggests how in this context one might proceed to develop a political position without closing down uncertainties and ambiguities, without establishing a singular narrative or "facts" of a situation, even in a scientific, "fact-driven" debate. It thus contains some trace of a different sort of anthropology: not one

that tries to describe a certain culture or set of cultural conditions, but one that instead investigates and draws on an understanding of the interplay of epistemological and ontological positions – and how and when this interface creates stable enough realities for people to generate political positions. In this dissertation, the reader should discover that those who dwell in that interface – who play the "edge ball", in the terms of my interlocutors (see Chapter 3) – are those who can be truly political. Such spaces can create situations where an outcome is not known in advance: a necessary condition for politics. As Massey has argued, drawing on Laclau: "Only if the future is open is there any ground for a politics which can make a difference," and thus: "For the future to be open, space must be open too." (Massey 2005, 11-12) This dissertation shows how Chinese journalists have created one such space.

While a considerable body of literature (discussed in Chapter 2) has explored China's environmental problems and the technical and policy approaches that could better address them, little has been written about climate change in China that takes into account how the transition to a more sustainable model of development might navigate nonlinear dynamics, complexities, incertitude and socially constructed polarities in a way that could constitute a politicised approach to the challenge. Such an ethnographically informed approach is one that this dissertation finds is closer to that of China's environmental journalists than to the approach of many academics, scientists or technocrats in the climate-change arena, and it might lead us to reflect on assumptions of these observers, including about the role of media and communication in the climate challenge. This dissertation attempts to address that gap, not only by drawing on a theoretical literature largely unexplored in the Chinese context, but also through deep ethnographic research into the ways that Chinese journalists engage with the science and politics of climate change. It also presents this in a language and style that does not attempt to close down towards singular narratives, but draws on the humility and sincerity of journalistic writing that keeps multiple framings in view.

Therefore, readers should take away from this dissertation that Chinese environmental journalists, by navigating multiple framings and narratives in the context of uncertainty in the "edge ball" space, provide a potential model for how better to engage with and understand the politics of climate change than the risk-oriented, singular narratives of many academics, NGOs and governments. Stirling (2013) has

written that the great strength of green politics lies in its critical pluralism — and it is precisely a form of critical pluralism that I have identified among journalists in this dissertation and whose engagement informs its theory, methodology, style and conclusions. Chinese climate-change reporters are shown to have sophisticated understandings of the complex ways in which sustainability questions implicate science and politics, understandings that might help point us to cosmopolitan approaches to climate change and more critical, plural approaches to thinking about sustainability, in China and elsewhere.

But what is sustainability? The approach to sustainable development and sustainability in this dissertation is both normative and descriptive. These are terms that are now institutionalised discourses in themselves, with histories that predate the 1983-1987 World Commission on Environment and Development (WCED, or "Brundtland Commission") that provided the benchmark definition of sustainable development: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987, 8). These discourses have also travelled considerably since that time in a number of directions (cf. Stivers 1976, Leach, Scoones and Stirling 2010, UNCSD 2012). In official Chinese publications, sustainable development is rendered as *kechixu fazhan* (可持续发展 trans: *development that can be sustained*) and the definition tends to follow Brundtland's word-for-word (既满足当代人需要有不对后代人满足需要的能力构成威胁的发展 pron: *ji manzu dangdai ren xuyao you budui houdai ren manzu xuyao de nengli goucheng weihai de fazhan* trans: *development that meets the needs of the present without compromising the ability of future generations to meet their own needs*).

Throughout this dissertation sustainable development is regarded as an essentially contested concept — a concept like "democracy" or "art", for example — which as Gallie defined it, can engender "disputes… which are perfectly genuine: which, although not resolvable by argument of any kind, are nevertheless sustained by perfectly respectable arguments and evidence." (Gallie 1956, 169) Such a concept of sustainability not only goes beyond its colloquial connotations as the "maintenance of system properties", but also beyond rhetorical approaches that may be normative, but obscure complex or contested, political interpretations and interests and instead

promote managerial or bureaucratic solutions. In other words, it is a politicised sustainability that can be appropriated by dominant actors and citizens alike, interrogates what society and what kind of environment citizens seek to create, and thus draws somewhat, not exclusively on approaches such as political ecology (cf. Wolf 1972, Robbins 2004, Walker 2005) and social ecology (cf. Bookchin 1995). Ultimately, this "contested, discursive resource" of sustainability (Leach, Scoones and Stirling 2010, 42) is something that is regarded as being given greater meaning through its exploration and challenge by means of the ethnographic research that follows.

This ethnographic research was informed and inspired by a deep and long-standing practical engagement with the politics of sustainability in China over several years of work in London, Beijing and elsewhere. In 2006, I became Deputy Editor of *chinadialogue*, a fully bilingual website and journal devoted to climate change and the environment, with a special focus on China. An independent, non-profit organisation based in Beijing and London, *chinadialogue* publishes high-quality articles, extended reports, policy briefs, blog posts, interviews and book reviews on environmental issues, aiming to provide readers with accurate and bilingual information that may otherwise be difficult to access – due to the language barrier, as well as censorship – and to facilitate tolerant dialogue on a wide range of environmental issues. Over the years, *chinadialogue* has become a popular and influential platform for lively debates on climate change and the environment across national and linguistic borders, and has helped to pioneer discussion in the Chinese public sphere of a number of important issues, such as the regional security impacts of climate change in the Himalayan watershed and the environmental effects of new laws on public access to information. In addition, *chinadialogue* publishes a bimonthly print journal; awards an annual prize for the best Chinese environmental journalism (Dong 2013); and organises other "offline" events. Surveys indicate that its Chinese readers include government officials, policymakers, journalists, students, academics and professionals working in environmental fields and its material is widely reproduced by some of China's biggest newspapers and websites. This position at *chinadialogue* has not only shaped my perspective on the politics of sustainability in China and elsewhere, but also afforded me considerable access to networks of environmental journalists, activists, policymakers and academics in Beijing.

Therefore, my engagement with journalism has frequently been as participant as much as observer. In the aftermath of the Copenhagen climate change talks in late 2009, China's role in the global politics of climate change rose up the international media agenda. During the UN climate-change talks that year in Tianjin, in northeastern China (discussed in Chapter 6) I wrote a widely shared and syndicated media article from that event (Geall 2010c), which argued that the situation underlying the perceived stand-off – the deep, mutual mistrust between China and the United States regarding their governments' capacities to rein in emissions – meant the UN process had nearly become irrelevant. At the conference I was interviewed for an online TV station and one ethnographic interview I conducted with a Chinese journalist turned into her interviewing me for her newspaper. In June 2010, while my ethnographic research among Chinese journalists continued, I also carried out an intense series of in-depth, semi-structured interviews, supplemented by questionnaires, of participants at a two-week-long climate-change fellowship for 10 journalists and editors from around China, organised by Chinese business magazine group Caixin Media and the Danish NGO International Media Support. These interviews also formed the basis of a report, *Climate-change journalism in China: opportunities for international cooperation* (Geall 2011a), aimed at primarily at the NGO and donor audience.

During that year and in subsequent years, my engagement with sustainability issues in China began to take a number of different forms, still normative, practical, professional and inter-disciplinary, yet based in the same fieldsites and interacting with a similar set of actors, institutions and discourses: I consulted for BBC Media Action on the early stages of a pan-Asian climate-change attitudes survey; I acted as a member of the East Asia Jury of the Earth Journalism Awards; I commented on a number of relevant media stories both on and off the record; I published an edited book for general readers about the history of Chinese environmental activism, *China and the Environment: The Green Revolution* (Geall 2013b); and I worked as the International Coordinator of a Special Policy Study on Media and Communications Policies for Improving Public Participation in China's Green Development (CCICED 2013) for the China Council on International Cooperation on Environment and Development, a high-level advisory body under the Chinese State Council. Furthermore, I taught courses at University of Oxford as a Departmental Lecturer in

2012/3, covering many topics related to China and the environment, during which time I supervised a number of MSc dissertations related to Chinese environmental policy and activism. This list is not only intended to indicate the various factors influencing the perspectives in this dissertation, but also points to the fact the questions tackled here became increasingly perceived as urgent, global concerns during the period of the dissertation fieldwork, which, in turn, shaped my approach as a scholar: seeing the goal of any work on this topic as being necessarily engaged and informed by political and normative concerns; seeing this work as needing to be of use to diverse constituencies outside the academy – and finding less interest in work that is not.

This dissertation makes extensive use of documents, perhaps an almost inevitable consequence of engaging with journalists, even if it is an atypical approach for a social anthropologist. It is a decision partly inspired by Gusterson, who in revisiting Nader's proposal to "study up", calls for an ethnographic approach based on "polymorphous engagement" that incorporates research techniques such as formal interviews, as well as "extensive reading of newspapers and official documents, and careful attention to popular culture" (Gusterson 1997, 116). The methodological approach to the documents themselves is shaped by literature in social anthropology and on its margins (Riles 2006, Strathern 2006, Ginzburg 1989), as well as the practical, political reality of needing to work with the published materials of journalists who would not be named in the dissertation, which required some creativity in the research design. Following Ginzburg and Riles, I argue that in treating articles from the media as ethnographic artefacts, one finds an epistemological model in "a method of interpretation based on discarded information, on marginal data, considered in some way significant" (Riles 2006, 6). The anthropologist is pointed to the margins of the newspaper, for example, to determine its interpretation. Documents are regarded as ethnographic artefacts and an integral part of this study, which incorporates academic texts, scientific reports, newspaper articles, government reports, propaganda, activist publications and other documentary sources as an important layer of the analysis.

Beyond documentary sources, the more conventionally ethnographic fieldwork for this dissertation was mainly undertaken in Beijing during 2010. Beijing was chosen

since, as the capital, it is a centre not only for journalistic activity but also climate governance, sustainability and environmental decision-making for the People's Republic of China. However, other sites appear in this dissertation, not only as I travelled to relevant events in places such as Tianjin, in north-eastern China, but also as situations elsewhere – national and international environmental issues – were reported and discussed in Beijing. Throughout 2010, I spent around two days of each week in the *chinadialogue* office in Beijing, working part-time as an editor and consultant on various environmental, editorial and strategic issues. *chinadialogue*'s Beijing staff are Chinese journalists and civil-society activists, many of whom have long-standing experience of environmental activism and journalism. Therefore, I frequently used the office as a platform or launch-pad for gathering documents and materials, conducting informal interviews, opening group conversations with informants about key topics, identifying potential informants and negotiating access through email or telephone. The rest of the week, when I was not reading and writing, was spent in environmental conferences, in meetings, interviews, journalists' salons and other spaces that together formed a relatively coherent and sustained, if not contiguous or bounded, fieldsite.

The small *chinadialogue* office was fairly typical of the spaces that characterised the fieldwork: like many small NGOs, the organisation is based in a multi-use, residential and commercial high-rise building. It sits in the city's main "technology hub" of Zhongguancun: a planned attempt to recreate the successes of California's Silicon Valley in north-western Beijing's Haidian district, between the third and fourth ring-roads, near the concentration of China's most prestigious universities. The prominent Chinese environmental journalist Dai Qing, reflecting in 2007 on Israeli artist Menashe Kadishman's 1973-4 painting *Cracked Earth*, noted how few the green spaces in the district had become. Haidian, as Dai noted, around 20 years ago was still "paddy fields growing the soft, fragrant West Beijing rice":

> "Large ponds with lotus flowers were dotted here and there, and it was easy to buy lotus pods and roots along the roads. A century ago members of the imperial family (and later top communist party leaders) amused themselves in Haidian. They killed time in imperial gardens such as Yiheyuan (the Summer Palace), Yuanmingyuan (the old Summer Palace) and Yuquan shan (Jade

> Spring Mountain).” (Dai 2007)

Yuanmingyuan would later become a site of considerable importance for environmentalists, as the place where environment vice-minister Pan Yue of the then State Environmental Protection Administration (SEPA, later the Ministry of Environmental Protection) launched the first major public environmental hearing into a development, at the old Summer Palace lake (see Chapter 2). Contrasting the extravagant celebrations for the upcoming Olympic Games with environmental costs in the form of water scarcity and pollution, Dai continued:

> “Now the wetland is completely gone, along with the paddy fields and lotus ponds, which dried up as the surface water and then the shallow groundwater disappeared” (Dai 2007)

Many older people noted to me that Zhongguancun once sat among duck farms. Now I sat amid a virtual collision of half-finished high-technology company buildings. Each week, I watched the Chinese headquarters of a large US-based information technology company rise alongside my desk, workers hanging off its sides, welding and drilling. Almost every visitor coming to the office by foot or even by taxi would become lost: the new, rapid urban development here was obscure, confusingly planned and unfamiliar even to locals. Yet the area was alive with commerce. It had previously been dominated by large electronics markets, but was becoming a more upscale and more diverse retail environment: a typical journey into the office involved a 15-minute walk from the subway station through a maze of underground shopping malls selling international brands and offering a wide range of food, drink and entertainment to students and office workers. Kentucky Fried Chicken; Beard Papa’s cream puffs from Japan; a multiplex cinema; Costa Coffee; designer lingerie. The office building itself – incongruously graced by a large chandelier in a marble, high-ceilinged lobby, and split into blocks with security guards at each door – was full to the brim with online businesses operating on auction and retail websites like Taobao.com. Young men and women hurried and grappled with large boxes, rushing in and out of the elevators and down the long corridors into mostly identical duplex apartments full of computers.

During the period, I lived on the east side of the city, mostly within the second ring

road in a flat in a small *xiaoqu*: a five-story walkup apartment complex from the 1980s, built around a shared courtyard, gated but never closed or guarded. Unlike in Zhongguancun, here there were no shopping malls or luxury branded stores within easy walking distance of my apartment: commerce and bustle was mainly on a smaller scale, in the street markets of surrounding *hutong* alleyways: vegetables laid out on blankets on the ground; noodle restaurants with four or five tables; kiosks selling basic goods. A few coffeeshops, owned by local bohemian types – dark, black walls, late-opening and infused with 1950s nostalgia; a soundtrack of American jazz and folk – were frequent work and meeting places, particularly since my apartment had no internet connection. Many of my fieldwork conversations and encounters were conducted in the niches of this rapidly changing urban landscape: an old courtyard opposite the office, renovated into a mid-price traditional-style Beijing restaurant among the high-rises; a Chinese-brand coffeehouse on the ground floor of a technology company; a hotpot restaurant in the basement of an online media company. Furthermore, I observed the life of countless conference centres, NGO offices, media offices, restaurants and rented spaces that more often than not were marginal, on the edges of planned and commercially driven development. A small, squat grey building on the edge of the Fourth Ring Road, surrounded by high rises; smoky coffeeshops in areas of the city that felt perpetually blanketed in the dust of construction work. Or spaces that felt somewhat disrupted: luxurious private rooms in state-owned corporation restaurants; multi-purpose developments with high-backed chairs and a neo-Daoist luxury edge – invariably booked by incongruous looking groups of NGO activists and journalists, dressed not in suits but typically in jeans and outdoors-wear.

Key sites for participant observation were gatherings of environmental journalists. Chinese environmental reporters have for a long time organised "salons" where experts are invited to introduce environmental topics of interest. Furthermore, training sessions, many of them funded by western development agencies, were sites for ethnographic observation and were followed up with visits to offices of funding bodies, NGOs and development agencies in the United Kingdom and Denmark. Perhaps it should be expected that as an ethnographic observer I would feel alienated from my surroundings, but when I questioned informants about the physical spaces we frequently occupied in Beijing, they often shared a similar, mild bewilderment. It

was apparent that this recurrence of liminal social spaces in the interstices of planning was not only a metaphorical reminder of the “edge ball” space (see Chapter 3) that advocate journalists and environmental activists metaphorically inhabit, but also a real consequence of the closure of options that restricted such activities. Many other sites that constituted the spaces of this fieldwork speak more to the international significance that the work took on during the period, which often sat in contrast to the unassuming reality of its lived experience. The Meijiang Convention and Exhibition Centre in Tianjin – where an intercessional meeting of the United Nations Framework Convention on Climate Change took place in late 2010, and which covers an area of 230,000 square metres – invited in the very same group of advocate journalists and environmental activists that I frequently interviewed throughout my fieldwork in Beijing, but this time alongside a cast of thousands of diplomats, lobbyists and international campaigners.

However, the closure or closing down of options, referred to above is quite real – and despite my high degree of access, it had serious effects on me and the subjects of this dissertation, as well as on many outcomes described throughout (as introduced in Chapter 2, the year 2010 was a period of closing down, in terms of sustainability approaches). This closure affected the dissertation by forcing a number of framing decisions and thus created silences, as well as the need to anonymise and to self-censor. Many of the characters in this fieldwork take assumed names and some identifying details have been changed. Many stories have been omitted. The cruelty of this silence – not to mention the state repression and violence that helped to enforce it, the bureaucracies that sustained it and the academy’s conceited excuses for socially constructed ignorance, which I have sustained here – is painful to consider. Makley (2009) wrote that her fieldwork in Tibet had brought her face to face with the anaconda in the chandelier, referring to Link's (2002) discussion of the unspoken "psychological engineering" of state repression and its often unconscious effects on China scholars. But it is Woeser, the Beijing-based Tibetan poet and blogger, who has described the stakes of this predicament best:

> “A sheet of paper can become a knife
> —A rather sharp one, too.
> I was only turning the page

When the ring finger of my right hand got sliced at the knuckle.
Though small, the sudden wound oozed blood,
A thread as fine as silk, and stung a little.
Startling transformation,
From paper into knife:
There must have been some mistake, or
Some kind of turning point.
This ordinary paper… a chill of awe." (Woeser 2008, 61)

During the period of my fieldwork, the closure of state repression caused me to fear for my own safety occasionally, and more often for that of my informants. My interviews were kept in password-protected files on a password-protected laptop and not emailed or made accessible online in any way. I used an encrypted, anonymous email account for sensitive communication. However, my general email inbox was targeted by state-sponsored hackers posing as journalists researching relevant topics, including GM crops (the hack attempts were unsuccessful); this email account was accessed by unauthorised people with an IP address in China; I was watched during interviews in public places; and I was interviewed by an employee of a state news agency, who claimed to be interested in discussing the topic of my research, but was in fact only concerned with learning exactly to whom I had been speaking throughout my research (I refused to cooperate, citing academic confidentiality).

Nor was the violence of repression confined to state power: in the spring of 2010, I met with Fang Xuanchang, the science and technology editor at *Caijing* magazine, a major player in the influential (though frequently blocked) watchdog website *New Threads* (新语丝; pron: *Xinyusi*), which tends to focus on cases of scientific and medical fraud. He, some of his journalist friends, a long-time key informant of mine and I met in a high-end coffee-shop in Beijing's Central Business District and discussed his passion for science journalism. The 37-year-old editor cut an imposing, brawny figure – my friend described him as a "kung-fu master" – yet he spoke quietly, quickly and with an insistent tone that made it hard to get a word in. He told me about his interest in what he saw as the lost spirit of the May Fourth Movement, the nationalist movement of 1919 that embraced the Enlightenment ideals of science and democracy. "Not many people understand the work we are doing," he said. "Most

Chinese people's attitudes to science are superstitious and fearful." Regarding scientific and critical thinking, Fang added, "Chinese people need a new enlightenment." Soon afterwards, he appeared alongside fellow science journalist Fang Zhouzi on a television debate about earthquake prediction. An official from China's national earthquake administration spoke positively on the programme about parrots that can predict earthquakes and the paranormal abilities of a man who claimed he heard ringing in his ears before an earthquake that April in Yushu, northwest China.

Fang Zhouzi and Fang Xuanchang cast doubt on these paranormal claims on the programme, so Ren Zhenqiu, a scholar formerly at the Chinese Academy of Meteorological Sciences, accused the journalists of taking money from the United States government intended to stifle Chinese innovation. After the recording, Fang Zhouzi claimed on his blog, Ren said he was a "big Chinese traitor" and threw a punch at him. Then someone tried to kill Fang Xuanchang. A deeply upset friend phoned me to tell me the news: it turned out that on June 24, 2010, Fang had finished work around 10pm and had begun his walk home from the *Caijing* office. Half an hour later, nearing his apartment, he felt a sudden blow, which he initially mistook for a football bouncing off his back. Fang turned to see two large men behind him brandishing steel bars. He tried to run away – and then to shield himself – as the men struck him repeatedly across his back and head. As Fang stumbled towards a passing taxi, his clothes soaked in blood, the attackers left the scene.

That night at Beijing's Navy General Hospital, doctors stitched a five-centimetre wound on the back of his head. His assailants behaved like professionals, Fang told me, executing the brutal attack in about four minutes and showing little concern about passersby. "Their goal was clear," he said in an email message to me. "That was to kill me on the spot, or stop me from reaching the hospital in time, so that I would bleed to death." This was not the end of the threats. On July 2, Fang Zhouzi wrote on his Sina microblog that he had received a threatening phone call. "Be careful in the next few days," the voice said. "Someone is going to fix you." Soon afterwards, he was attacked by a pair of men wielding pepper spray and an iron hammer.

The attacks were eventually blamed on the Chinese urologist Xiao Chuanguo, about whose controversial and costly treatments for spina bifida they had reported. The trial,

which lasted less than a day, handed the doctor a five-and-a-half-month prison sentence. There was little media coverage of the attacks, though it was reported in brief in some Beijing newspapers. No reports asked why someone might want to attack a science journalist, suggesting that for Chinese journalists, the message of the attack was clear: don't go near this subject, or you might be next. The sheet of paper might become a knife. Thus, understanding the context in which environmental journalists work — and the challenges, controls, changes, contours and complexities of this landscape in China — is an important aspect of this dissertation, which is explored further in Chapter 3.

In order to understand the significance of the ethnographic research that follows in the Chinese context, Chapter 2 of the dissertation comprises a close examination of the political and media spheres that have governed and continue to influence environmental decision-making in China. This chapter introduces the historical trajectory and context for environmental policy-making in China, putting debates about China's environmental governance into a perspective that enables some understanding of the closing down of options currently underway in climate-change governance. Furthermore, understanding the informational context in which environmental decisions have been made in the past in China should help us to conceptualise the great change and complexity of the Reform-Era transition, and understanding the emergence of participatory approaches in China's environmental NGO movement, and subsequently the protests of urban citizens, also helps us to understand the opening of multiple options that have at points been subjected to closure. Grasping the range of scholarship around China's environmental challenges helps us to take stock of the theoretical and analytic perspectives that could be enriched with attention to under-explored questions in the Chinese context: the deficit model, the place of incertitude, the politics of action in states of uncertainty and the perspectives of China's climate-change journalists.

Chapter 3 then analyses how the Chinese media sphere has diversified in the Reform Era since 1979, from an era of information control, to one in which commercial incentives and interests might exist alongside government control, watchdog publications, new ideal-types for professionalisation in media, new media technologies, rising public concerns about pressing environmental issues and other

proliferating complexities introduced by, for example, new government regulations around transparency and open information. In this complex and confused space, the dissertation finds that a complex game-playing occurs in which a particular move into the space of the "edge ball" provides an example of the search for a position from which issue entrepreneurs might probe critical perspectives.

In Chapter 4 the dissertation investigates how in this changing context, reporters have covered environmental events in China that have been linked to climate change. What does it mean to frame a problem as being related to human-caused climate change, and how political is that process of framing? Dominant narratives put an emphasis on the cognitive authority of scientific understanding with regard to climate change. However, the dissertation finds that an edge ball space allows for a cosmopolitan and radically interpretative perspective that can integrate plurality and the complexity of global, interlinked human-natural systems with specificity and local, political narratives. Through an examination of texts, as well as ethnographic interviews and observations regarding the investigations of journalists reporting hydropolitical landscapes in the far north and the south-east of China, entrepreneurial journalists are shown to explore framing in radically plural ways that respond to scientific issues in humble and nuanced political forms.

Chapter 5 continues this discussion by investigating the reporting of the science of climate change in China, in a time of mounting controversy sparked by the "climategate" and "glaciergate" international media scandals. What do risk, uncertainty, balance and scepticism mean in the context of reporting such climate-change controversies, and why does it matter? Journalists are seen to work within a complex circuitry of relationships and framings, and their relationships to scientists and scientific controversies are examined through ethnographic interviews and observations, finding that many journalists explored these stories precisely to expose the politics of climate change and undermine scientistic certainties.

Chapter 6 explores the realm of global climate-change negotiations, drawing on reporting of the UN climate-change process, as well as ethnographic observation of a UN conference in Tianjin in 2010. How do reporters make sense of such technocratic systems at the international level? Here the dissertation finds some optimism in the ways that not only journalists, but also many activists, contest the politics of climate

change within the superficially depoliticised sphere of institutionalised sustainable development. Chapter 7 concludes the dissertation by exploring whether in harnessing such contestation around climate change and its reporting, a more radical, participatory and cosmopolitan approach to sustainability might be found, one that scales up the ambition of citizen-science perspectives.

Chapter 2: Environments

Understanding the history of environmental policy in the People's Republic of China is important in order to grasp the proper context and significance of this dissertation, and what its findings might tell us about contemporary China and approaches to climate change and media there and around the world. In the build-up to the 12th Five Year Plan (2011-2015), I will argue, the People's Republic of China experienced a moment of closure with regard to sustainability approaches. An earlier process of opening up — which had reached its peak in 2007 — had palpably begun to close again by 2010, hastened by a number of drivers including the global financial crisis and the subsequent economic stimulus, the discourse of "social stability", spurred by an anxiety about rising middle-class discontent, and a push towards technocratic modes of "low-carbon" governance, which prioritised technologies and sectors with strongly vested interests and high degrees of lock-in, marginalised wider green and citizen-oriented approaches to sustainability, and had important implications for journalism about climate change and the environment.

With this in mind, this chapter explores a number of perspectives on the growth, evolution and dynamics of environmental policy, environmental movements, sustainability and climate-change policy in the People's Republic of China, and details what my research has uncovered, with regard to the history of China's environmental movement. This brief history draws on the collaborative work that I have carried out as an editor and practitioner, working with a number of journalists and academics focused on China's environmental movement, and stretches from the founding of the People's Republic of China to the present. It shows the extent to which many previous accounts tended to over-emphasise certain actors, institutions and discourses, particularly those associated with environmental NGOs, while overlooking a number of significant examples of environmental contention. This points to a changing constellation of social actors, discourses and institutions in the formation of sustainability approaches, as well as the persistence of certain approaches to environmental policy from earlier eras.

This chapter does not explicitly draw on my ethnographic material, or on a great deal of anthropological research and analysis, but is intended to draw out and illustrate a

clear and original account of environmental politics in the People's Republic of China as a crucial context for the later chapters. This is designed to speak honestly to the concerns and engagements of my journalistic interlocutors, drawing as far as possible on their examples and accounts – and, indeed, on their words and their normative, journalistic style. However, it also sets out two original, key contributions to understanding this context: the need for closer attention to the role of verticality and other spatial metaphors for understanding Chinese environmental governance and its sociopolitical dynamics; and the hitherto overlooked extent to which after a period of opening to multiple environmental approaches in the era of the "green public sphere," the technocratic move towards "low-carbon development" in the past decade has coincided with the closure of participatory approaches in China's approaches to sustainability.

Human beings need tempering too: environment and society under Mao

Throughout the Mao era, information was heavily controlled by the state. Great catastrophes occurred without being reported in the national media. Many examples of this systematic repression of information (cf. Yang 2012, Dikötter 2010) can be cited to suggest the existence of a "coercive memory regime" that restricted publishing in China around the events of the Cultural Revolution and the Great Leap Forward (Lee and Yang 2007), although collective memories have also provided powerful demotic ways of remembering suffering and articulating trauma, as illustrated aptly by Jing (1996) and Mueggler (2001).

There was a notable lack of reporting and documentation of serious environmental incidents during the period, such as the most lethal dam failure in world history, which occurred in Henan province in central China in August 1975, after a typhoon hit the south-eastern province of Fujian and gathered strength as it twisted up through China's central plains. The 25-metre-high Banqiao Reservoir Dam, built in 1951-52 with the help of Soviet consultants, collapsed and triggered the failure of a second dam and a cascade of destruction that wiped out entire villages. Survivors recalled the bursting dam sounding like the sky collapsing. Houses and trees disappeared in an instant as human and animal corpses floated to the surface of the floodwaters. Yet the death toll remained a state secret until 2005. Records now state that 26,000 people

died from flooding and a further 145,000 people died in the epidemic disease and famine that then blighted the region. But even three decades later, the state newspaper *People's Daily* wrote euphemistically of a disaster that had “long been ignored”, rather than concealed (Geall 2013b, 21; People’s Daily 2005).

The Chinese media reporting about the environment that did occur at the time, especially from 1949 until 1972, reflected prevailing political discourses about nature, as promulgated by the Chinese Communist Party (CCP) under Chairman Mao Zedong: a predominantly militarised discourse, with hallmarks of both millenarian socialism and enlightenment high modernism. “Utopian urgency” and “dogmatic uniformity” were two of the key themes of this discourse, as they were characterised by Shapiro (2001, 4), seen, for example, in the promotion of large-scale relocation and reclamation projects. Ho (2003) has suggested that Shapiro may have overstated the extent to which these discourses were applied in a totalising fashion, suggesting that the Maoist “Take Grain as the Key Link” campaign, which encouraged the conversion of pasture and other landscapes into arable land for the production of grain, was not uniformly applied across different geographic regions. Although this might imply that policies towards the treatment of diverse landscapes were more pluralistic than previously assumed, it is clear that attitudes in general toward nature and the environment, as they were reflected in media, showed little variation in their urgent and militaristic tone. Media reports represented nature as a battlefield, one on which the effectiveness of collective, ideologically motivated and militaristic mobilisation could be demonstrated and near-boundless abundance could be unlocked.

The role of such discourses in shaping newspaper reporting can be seen in 1970, during the reclamation of Dianchi Lake – China’s sixth-largest lake, just south of the city of Kunming, in Yunnan province. The push to convert lakes and rivers into arable land had been derived from the “Learn from Dazhai” campaign, a propaganda model for accelerated rural production, which was promulgated throughout the Cultural Revolution. The provincial newspaper *Yunnan Daily* reported:

> “For the past four months, Kunming District’s workers, poor and lower-middle peasants, People’s Liberation Army soldiers, revolutionary cadres,

> intellectuals, Red Guards and street residents, armed with red hearts of limitless loyalty to Chairman Mao and iron hands to reform the heavens and change the earth have conducted a people's war against Dianchi…" (Shapiro 2001, 122)

This project, epitomising the application of utopian campaigns that emphasised the transformative power of Maoist ideological work, was described elsewhere in the *Yunnan Daily* as a "great revolution of launching an attack on nature", which "subjected each Revolutionary Committee and the broad revolutionary masses to tempering" (Shapiro 2001, 128). Tempering (锻炼 pron: *duanlian*) was a recurrent metaphor for personal spiritual transformation in a socialist society through industrial labour, set out elsewhere in a speech by Mao:

> "Tempering means forging and refining. Forging is shaping by hammering and refining is smelting iron in a blast furnace or making steel in an open-hearth furnace. After steel is made, it needs forging, which nowadays is done with a pneumatic hammer. That hammering is terrific! We human beings need tempering too." (Mao 1957, quoted in Dittmer 1988, 72)

Thus environmental discourses in the Mao era were performative of new subjectivities, in particular, of the citizen as the new socialist man, "tempered" through the conquest of nature. By what Lifton (1968, 105) called the "psychistic fallacy", these subjects were then empowered to take command of nature. Since technology and the psychic state of the "immortal Chinese revolutionary" were seen as interchangeable, "cultural substance took precedence over accurate perception of the environment and of the requirements for altering it". Shapiro (2001, 132) noted that decades later many residents mourned the lake's demise, not least since productivity on much of the filled-in lake was very poor. In some areas, reclamation efforts had yielded no land at all, since the lake was too deep and the currents too fierce. Yet the project was carried out with a level of urgency reminiscent of the Great Leap Forward, around a decade earlier. Building the dam, draining the water and filling in earth for agricultural fields were compressed into a single spring. Critics of the project and its pace were labelled in the media as "reptilian": a metaphor intended

to reflect the gradualist pace of change purportedly envisioned by the demonised former Premier Liu Shaoqi, but that marked another important theme highlighted by Shapiro (2001, 4), which shaped much environmental discourse and media reporting in the Maoist Era: political repression.

Thus, dominant political approaches to environmental issues need to be understood, and not only through their representation in media articles. As Edmonds (2011) has noted, "environment" (环境 pron: *huanjing*) in Chinese has a similarly wide application as in English: referring to social spheres as well as geographical ones, such as the "media environment" (媒体环境 pron: *meiti huanjing*) or "political environment" (政治环境 pron: *zhengzhi huanjing*). The "natural" environment is thus often referred to as the redundant-sounding "ecological environment" (生态环境 pron: *shengtai huanjing*), although even this has been used on occasion to refer to wholly social spheres, such as advertising, much as "ecosystem" sometimes has a similarly managerial usage in English. Older ecological analogues are often said to be found in traditional philosophical concepts such as *tianren heyi* (天人合一 trans: *unity of man and nature*), something which is often referred to as an ancient root for environmental thinking in the Chinese context (Zhang and Barr 2013, 6), though it should be noted that the Maoist slogan "Man Must Conquer Nature" was also rendered *ren ding sheng tian* (人定胜天), using the same older term that could also be rendered as "heaven" and "nature" (Weller 2006, 49-50). Unless otherwise indicated, I refer here to the "environment" meaning those socio-ecological systems affected by pollution, resource depletion, climate change and other problems commonly dealt with by "environmental policy", but it is worth bearing in mind the potential confusions that arise through translation of the term (cf. Tilt 2010, 107; Weller 2006, 43).

As this chapter shows, from the founding of the People's Republic in 1949 until Mao's death in 1976, the dynamics of environmental politics shuttled back and forth, with the vicissitudes and tensions of elite, authoritarian politics, between technocratic, Soviet-influenced central planning and radical, utopian campaigns, yet the media environment and the space for citizen participation in politics remained dogmatic and

closed throughout. Even the periodic movements against technocratic, or purportedly "bureaucratic" rule by experts, such as the utopian campaigns of the Great Leap Forward and the Great Proletarian Cultural Revolution, rather than opposing bureaucratisation or empowering citizens, represented the top-down creation of a different form of pervasive bureaucracy that closed the space in which real participation or citizen science might otherwise flourish.

Despite the rhetorical force employed against "bureaucratisation" throughout the Mao Era, particularly in campaigns against the former Premier Liu Shaoqi, Whyte (1986, 5) has shown how "in certain respects Mao should be seen not as the true opponent of bureaucratisation, but instead as its most vigorous champion". According to Weber, bureaucratisation refers to:

> "[The] process by which more and more of social life comes to be governed by large, hierarchical, non-kinship based organisations, and by this transformation less of social life is left to the autonomous action of individuals, families, kin groups, and local communities of various kinds." (Whyte 1986, 6-7)

This means that "more and more distribution and consumption of resources in society are carried out not through individual and community self-sufficiency or through the market mechanism, but are instead subject to hierarchical allocation and coordination." The other meaning of bureaucratisation refers to the extent to which an organisation "approximates the ideal-typical traits specified by Weber — for example, an organisation based upon legal-rational authority, emphasising formal rules and procedures and written files…" (Whyte 1986, 6-7) Whyte therefore showed that while Mao made efforts to combat bureaucratisation in the second sense, this had helped to obscure the extent to which he advanced it hugely, in the first sense, by massively expanding the state bureaucracy and subjecting the entire economy and much of the rest of society, including the educational system, health care, the mass media, culture, the arts – and, I would add, environmental management – to bureaucratic control.

China launched its 1st Five Year Plan (FYP) in 1953, four years after the founding of the People's Republic, as a centralised and integrated national economic strategy

modelled on that first implemented by Joseph Stalin in the Soviet Union in the 1920s (Geall and Pellissery 2012, 156). The plan, compiled by the State Planning Commission, stressed growth and increased government control of heavy industry as well as land reform. The government judged its 1st FYP mainly as a success: iron, steel and cement production expanded significantly (Hilton 2011). Redistribution of land from landlords and rich peasants to poor and landless peasants gave the new state great legitimacy among those poorer rural residents. The period also saw the country's first, incipient environmental policies: the *Regulations on the Protection of Mineral Resources* (1956) and the *State Provisional Programme on Water and Soil Protection* (1957) (Muldavin 2000, 251-2).

China's 2nd FYP, from 1958 to 1962, saw the unleashing of the other side of that (false) dialectic: the voluntarist campaign. An editorial in the official newspaper *People's Daily* in 1956 suggested that China achieve the goals of the 2nd FYP ahead of schedule and above target (Shapiro 2001, 72). But the reality of frenzied, productionist initiatives did not match the slogan in the editorial: "Greater, Faster, Better, More Economical." The utopian campaigns of the Great Leap Forward — an era characterised by the push for ever more ambitious production targets, to be achieved through decentralised mass efforts — helped create not only great environmental destruction, but also contributed to the starvation of millions of people (Dikötter 2010, Yang 2012).

Populist agrarian policies that had allowed peasants relative autonomy on newly redistributed land were replaced with a top-down blueprint for collectivisation (Muldavin 2000, 252). Peasant families had become members of mutual aid teams of five to eight families, which had then given way to agricultural producers' cooperatives. These were amalgamated in 1958 into rural people's communes, which were designed to regulate the activities of several thousand families (Whyte 1986, 9). The period saw a catastrophic mismanagement of resources, despite Mao's millenarian vision, which regarded ideologically driven environmental change — implemented in an urgent fashion through uniform models of mass relocation, land-use change, collectively organised large construction projects and rapid rural industrialisation — as the driver of future abundance in production. Examples of environmental destruction in the period include the widespread, unmanaged

deforestation that fuelled backyard steel furnaces, leading to soil erosion, landslides and increased risks of floods; an increase in water pollution incidents, as industrial effluent poisoned farmers; and huge pesticide overuse, as the chemicals were even used to catch fish and birds (Dikötter 2010, 174-188).

One paradigmatic example of naively dogmatic attitudes towards socio-ecological systems during the Great Leap Forward, and the entire neglect of the complex dynamics of such systems in political approaches to the environment, is seen in the "Four Pests" campaign, which sought to harness a synchronised mass effort in order to eliminate populations of rats, mosquitoes, flies and sparrows. Targeted because they ate grain seeds, sparrows were driven close to extinction, partly by being kept in the air by the din of residents clapping metallic household objects until the birds dropped from the skies in exhaustion. A major problem — apart from the predictably perverse incentives for residents to attract vermin, so that one could be rewarded politically for having killed them — was that the birds ate insects. As a result of the bird die-offs, infestations of locusts and other insects increased after 1958, particularly in 1960-1961, ruining a sizeable proportion of the crop and contributing to the famines of those years (Dikötter 2010, 188).

After the disaster of the 2nd FYP, China did not implement the next Five-Year Plan, or reintroduce similarly destructive policies and campaigns, until 1966, at the start of the Cultural Revolution, when a similar attitude to the environment arose in the swing back towards utopian voluntarism shortly before and during the first phase of the Cultural Revolution. Mao's revival of the tale of *Yugong Yishan* (愚公移山 trans: *The foolish old man who moves mountains*): the tale of an old man who, against the advice of his peers, dug up the twin mountains that blocked his view by enlisting his many descendants to finish the job, not only emerged as a Great Helmsman-endorsed metaphor for the long war against imperialism and feudalism ahead, but also, far more literally, for the great transformations of the physical landscape that could be achieved in a socialist society with collective effort and low technology, such as the massive rollout of small dam projects for irrigation throughout the period (Shapiro 2001, 95-137). Growth at all costs was reintroduced, with unattainable goals for industrial expansion (Muldavin 2000, 252). As an indication of the quality of this construction,

by 1981, 3,200 of these quickly built dams had collapsed – 3.7% of all dams in China (Shui 1998).

Prior to the founding of the People's Republic, China had a long history of civil society, defined by Macey (2000, 62) as the "sphere of human activity that is outside or apart from the structures of states and governments and in which free individuals form voluntary associations and establish pluralistic relations based on affinities and common interests rather than coercion". Since the late Qing dynasty, chambers of commerce and guilds, kinship organisations, religious organisations, neighbourhood temple associations, charity groups, intellectuals' associations and even secret societies were actively involved in politics (Hilton 2013), but the Maoist expansion of state bureaucracy meant that civil-society organisations were suppressed, specifically by the 1950 *Provisional Regulation for Registration of Social Organisations,* which only permitted "people's organisations", such as the Party-affiliated Communist Youth League.

The support that media reporting about the environment provided for such state control, expanded bureaucracy and systematic political repression can be seen again in another extract from *Yunnan Daily* about the Dianchi project, which in no uncertain terms suggested the counter-revolutionary motives of any criticism of the project, however technical it might seem.

> "The broad revolutionary masses and revolutionary technicians, using the workplace as a battlefield, strongly criticized the traitor/secret agent/scab Liu Shaoqi's foreign slave philosophy, reptilianism, and other such things in his counterrevolutionary-revisionist black bag, and established Chairman Mao's proletarian revolutionary line, ... designing as they worked... They didn't use steel, didn't use concrete, but relying on their own hard-working two hands, they used rock and mud to build a dike" (Shapiro 2001, 127)

This was a repression deeply bound up with the Cultural Revolution critique of intellectuals and experts, who, according to the ideology of the time (Stockman 2000, 165), had become a new, bloated elite, numbering too many, more concerned with technocratic economic modernisation than with egalitarian social revolution.

Intellectuals were accused of demanding special privileges in society and having too much influence in decision-making — their armchair claims of expertise, divorced from practice, being used to monopolise technical decisions. Paradoxically, yet altogether predictably, it became dangerous to work on potentially political topics, with the consequence that many human geographers, for example, relabelled themselves as physical geographers during the period (Edmonds 2011, 16). With experts described as the "stinking ninth" of 10 categories of class bloodline (one popular slogan was "the lowliest are the smartest and the most elite are the most foolish"), the Cultural Revolution attitude to science emphasised mass participation, such as in public archaeology, radically distributed models of primary health care and rural education and mass participation in earthquake prediction, a field of scientific investigation that is now widely discredited, but which remains state-supported, if controversial – as also noted in the previous chapter – in China today (Geall 2010b).

Chinese seismologists have long claimed that the February 4, 1975, earthquake in the north-eastern city of Haicheng was successfully predicted, and that the subsequent evacuation of the city avoided many injuries and deaths. After declaring the Haicheng prediction a victory for Maoist approaches to science, the government mobilised about 100,000 amateur seismologists and volunteers to work as earthquake forecasters, with one sympathetic western account (Bennett 1979) describing a volunteer brigade in Shenyang, north-east China listening around the clock for unnatural rumblings in a speaker wired to a microphone placed in an underground tunnel. However, an official Chinese publication 13 years after the quake stated that there were 1,328 deaths and 16,980 injuries from the Haicheng quake (scientists had previously said that "very few" were killed), and that the main quake was also preceded by an intense series of foreshocks for around 24 hours, likely causing many people to flee spontaneously (Shou 1999). (This practice also led to many false alarms, continuing up until the 1990s: some 30 inaccurate predictions brought Chinese cities to a standstill between 1996 and 1999. More memorably, the campaign failed to predict the hugely destructive Tangshan earthquake in 1976, which resulted in more than 240,000 deaths and, for many, heralded the end of the Cultural Revolution.)

Social morality must be maintained: Environmental attitudes under Deng

In 1972, despite prevailing political attitudes towards science and the environment, something of a turning point occurred in the government approach towards environmental policy. Two events in China were seen to have persuaded policymakers in the State Council to establish the first investigation and treatment committee on environmental issues, headed by Premier Zhou Enlai: the first was a red tide (a toxic algal bloom) in coastal waters near Dalian, in north-eastern China, which caused a huge die-off of shellfish; the second was the discovery that fish sold in Beijing had high levels of toxic chemicals in their flesh (Muldavin 2000, 252). Furthermore, following the rapprochement, the People's Republic had come to occupy the China seat in the United Nations and thus participated in the influential Conference on the Human Environment, held in Stockholm (Edmonds 2011, 15-16).

Despite a defiant statement at the Stockholm conference — China's delegate, Tang Ke, put particular emphasis on the use of toxic chemicals in the Vietnam War by "US imperialism" (Bulletin of the Atomic Scientists 1972, 54) — the formation of China's environmental bureaucracies, particularly the State Environmental Protection Administration (later the Ministry of Environmental Protection) had their roots in Chinese participation at Stockholm, particularly that of the influential official Qu Geping. The following year, the first national conference on environmental protection was held in Beijing (Muldavin 2008, 253), which led to a series of regulatory decrees and targets on controlling pollution. In 1973, China also founded its first environmental publication, *Environmental Protection* (环境保护 pron: *Huanjing Baohu*), with the writer and official Guo Morou (who had been severely persecuted during the first phase of the Cultural Revolution) providing the calligraphy on the masthead (CCICED 2013).



Figure 3. "Social Morality Must Be Maintained". Government propaganda poster, 1984.

From 1972 into the early Reform Era, there was a marked increase in government environmental propaganda and communication. In government propaganda posters from the period, where previously images might have represented revolutionary subjectivity with reference to industrial labour or the conquest of nature, the maintenance of social harmony was represented through respect for nature and the environment, for example, (see Figure 3, from 1984) in the figure of a girl picking up litter deposited by a carefree young couple, with the slogan "Social Morality Must Be Maintained".

Since the death of Chairman Mao, China's environmental degradation had not been driven by the same urgent push for expanded production. Instead, under market reform, profit became the primary driver. Coinciding with the turn to neoliberal economic programmes in the United States and Britain, the paramount leader Deng Xiaoping's pragmatic, technocratic focus on the "Four Modernisations" in industry, agriculture, national defence, and science and technology, launched in 1978, set the stage for a new period of rapid economic growth, spurred by market forces within the economy, which encouraged competition between state firms and considerable devolution of political-economic power to the provinces and localities, as well as limited openings to foreign investment — and a new conviction that a certain degree

of social inequality could be tolerated in the development process (Harvey 2005, 121). In the countryside, decollectivisation and the implementation of the Household Responsibility System, which divided all land into household-controlled plots, exposed peasants for the first time to economic forces far beyond local control, setting in place a declining sense of community and common property management of communal capital assets, such as irrigation ditches and erosion control infrastructure (Muldavin 2000, 253). A corresponding deregulation of environmental management and new set of incentives for local governments, in the context of an unstable and undeveloped market, resulted in the loss of local control over environmental resources and provided incentives for not only governments but also more vulnerable villagers to pursue unsustainable practices, such as clearing forests for basic food production (Zhao 1993).

The elite dynamics of environmental policy-making began to change, too. Debates about environmental impacts had occasionally occurred in elite circles in Maoist China. During the "Hundred Flowers" movement, a moment of supposed liberalisation in 1956 that was swiftly followed by the brutal crackdown of the Anti-Rightist Movement, a discussion had occurred among water experts regarding the risks and potential merits of the Three Gorges Dam on the Yangtze River — a proposed project strongly supported by Mao, with a long history of discussion stretching back to the "founding father" of Republican China, Sun Yat-Sen, in 1919 — but it ended with the purge of dam critic Li Rui in 1959 (Shapiro 2001, 63). From 1960 to 1978, "war preparations" and the crackdown on experts during the Cultural Revolution made the project unfeasible.

However, during the early Reform Era, the dam appeared on the political agenda once more, prominently backed by Li Peng, an important official who became premier in 1987. Studies of the decision-making process that occurred, and led to the dam's approval and construction, have shown a system under reform that was characterised by "fragmented authoritarianism", with layers of bureaucratic authority, comprising a core group of top leaders, a layer of institutions linking the elite to the bureaucracy, State Council commissions with supra-ministerial status and line ministries that implemented policy. This arrangement produced an intense and protracted bargaining process over resources between bureaucratic units, eventually towards a consensus

(Lieberthal and Oksenberg 1998; Heggelund 2004). Furthermore, public opinion started to take on an incipient role: official and technical opposition to the proposal was collected in a book, *Changjiang changjiang* (长江长江 trans: *Yangtze! Yangtze!* Dai 1989), edited by the pioneering environmental journalist Dai Qing, a writer for newspaper *Guangming Daily*, which although remaining foremost a series of technical criticisms of the project, contained some veiled critiques of the undemocratic decision-making process around the dam (Boland 1998).

The breakneck pace of largely unregulated growth unleashed throughout this period came with great environmental costs — costs so high that, for the first time, Five-Year Plans began to include measures to adjust economic growth targets downward, reduce energy and material consumption, improve environmental protection and slow population growth. For example, the 6th FYP, from 1981 to 1985, included a national energy conservation programme. (New population-control measures also marked a change in demographic policies, driven in part by environmental concerns: Mao had previously encouraged birth rates to rise and systematically repressed "Malthusian" demographers. As documented by Shapiro [2001, 36-48], Ma Yinchu, one such demographic critic, had been persecuted for his purported "rightism".)

China had provisionally passed the *Environmental Protection Law* in 1979, but it passed from provisional to permanent status in 1989, the same year that China was rocked by protests from workers and students concerned about growing inequality, corruption and Chinese citizens' lack of political rights in an era of rapid growth (Yu and Harrison 1990, Black and Munro 1993). Haunted by *glasnost* in Eastern Europe — and indeed, the role of environmental civil society in its emergence (Vovk and Prugh 2003, Sarre and Jehlicka 2007) — state repression not only took the form of the violent crackdown on protests in Beijing on June 4, 1989, led by Premier Li Peng, but also the introduction of regulations, such as the *Regulation on the Registration and Management of Social Organisations* (1989), periodically tightened throughout the 1990s, on the management and establishment of civil-society organisations and foundations. Dai Qing, the dam critic, was detained for 10 months after June 4, 1989.

Beyond "pollute first, clean up later": sustainability in the 1990s and after

Post-Tiananmen, Chinese capitalism moved into a new phase. Huang (2008) characterised this as a shift from the "rural entrepreneurial decade" to the "state-led urban decade", dominated by corporations in which government entities or foreign companies had major shares. Andreas (2010), who, in a Marxist analysis of the same data, has framed this shift as a deepening of economic liberalisation, rather than a retrenchment of state control, pointed out the extent to which the labour market was liberalised in this period. Similarly, Li (2008, 70) described the 1990s as having seen the "defeat of the urban working class" by pro-capitalist government elites through mass privatisation, with the collapse of traditional job security and benefits, such as medical insurance, laying the foundation for an export-oriented capitalist boom, with China as the "workshop of the world". The welfare state experienced a further roll-back, analogous to neoliberal experiments in Europe and "structural adjustment" in the developing world (Lei and Walker 2013).

At this same moment, the political elite came for the first time to express principles aligned to the international, institutionalised discourse of "sustainable development". Much as international rapprochement had led to China's participation in the 1972 Stockholm conference and a rejection of the "pollute first, clean up later" (先污染后治理 pron: *xianwuran houzhili*) model of development, 20 years later, in the shadow of international condemnation for its 1989 crackdown on democracy protestors, China's participation in the United Nations Conference on Environment and Development, held in Rio de Janeiro in 1992, saw a new, official focus on sustainable development (可持续发展 pron: *kechixu fazhan*) emerge. Throughout the 1990s, sustainable development became a key phrase in government literature (Meng 2012). The 9th FYP (1996-2000) was the first to include the phrase (Edmonds 2011, 16), and in 1997, China published its first *National Sustainable Development Report*. The 15th Party Congress, in September 1997, listed the "huge environmental and resource pressures caused by population growth and economic development" as major difficulties facing the nation (Meng 2012). In 2002, then President Jiang Zemin included sustainable development as part of *xiaokang* (小康 trans: *small comfort*), the society of modest means that was a signature theme of his leadership (Tilt 2010, 11).

Throughout the period, these principles were codified in law. Since 1979, China's "rubber-stamp parliament", the National People's Congress, has passed 280 pieces of legislation, of which 29 relate to environment and energy, including perhaps most significantly the *Environmental Protection Law* (1979), the *Water Pollution Law* (1984), the *Air Pollution Law* (2000) and the *Environmental Impact Assessment Law* (2002). Other relevant laws cover forestry, fisheries, wildlife protection, marine areas, desertification prevention, clean production, solid waste and energy.

Enforcement provisions in these laws are consistently weak. For example, the *Environmental Impact Assessment Law* (2002) requires an environmental impact assessment (EIA) to be completed prior to project construction, yet if a developer ignores the requirement and builds a project without submitting an EIA, the only penalty is that the local environmental protection bureau (EPB) may require the developer to do a compensatory, "make-up" assessment after the event. If the developer does not complete this make-up assessment within the designated time, only then is the EPB authorised to fine the developer, a fine that is capped at a maximum of about US$25,000, a fraction of the overall cost, and indeed the revenue-generating potential, of most major projects (Wang 2007). In practice, many projects do not complete their legally required EIAs prior to construction. The existence of the "make-up" provision thus creates a loophole, which Alex Wang (2007, 204) has noted is well understood by Chinese environmental officials and scholars, who openly acknowledge that it is the result of a compromise in the legislative process, driven by concerns about limiting economic growth.

Wang Jin (2010) has thus argued that "China's green laws are useless", stating that the basic legal system is incomplete and that the laws that have been enacted are not well enough crafted to be of any value. As Alex Wang (2007) noted, provisions are often vague and more akin to policy statements. They frequently "encourage" rather than "require", for example. EIAs also require public participation, but this vaguely worded article is only required to be implemented after the EIA has been completed, but before it is submitted for government approval, severely undermining the use of a public consultation period in the project design phase, when it might contribute to making more informed decisions that are not only likely to reach greater public

acceptance but also might be more environmentally sustainable (Johnson 2010, 435).

Beyond the quality of the legislation codified in the Reform Era, significant structural and political-economic challenges to enforcement persist. Local collusion between officials and polluters frequently means that environmental laws are not enforced. Jiang (2007) has written sympathetically about county-level environmental officials' difficult position: while in theory, they are subordinate to higher-level environmental authorities, they are managed by the county Communist Party and government committees, meaning they take orders from local government officials. Local government officials are typically most concerned about GDP growth: a key determinant in the institutionalised political evaluation of their performance known as the cadre responsibility system. The local government will often side with polluters in an environmental dispute, he argued, but the environment bureau is supposedly responsible for preventing pollution, so will take the heat for any failure (Jiang 2007).

Elizabeth Economy is one of the best-known proponents of this "enforcement challenge" argument, which identifies the decentralisation of China's economy in the Reform Era as one of the drivers of China's contemporary environmental problems. Since "in keeping with its overall decentralisation of authority for decision making," the state devolved "authority over environmental issues" away from the centre, enforcement of central and local government laws was delegated to local officials (Economy 2005, 103). Economy argued that much of the subsequent failure of implementation of China's environmental policies came down to the conflicting priorities, and in some cases the outright corruption, of Chinese local officials:

> "In some cases, these local officials have personal ties with enterprise directors and try to broker lower discharge fees for the polluting enterprises. In other cases, local officials may pressure EPB officials to limit or ignore the fees because of concerns for social stability. The central government has reported that it typically collects about 30 percent of the total fees actually owed." (Economy 2005, 108)

This structural arrangement is frequently referred to in Chinese as *tiao kuai* (条块

trans: *branches and lumps*), an organic visual metaphor analogous to the common spatial metaphor, employed in academic literature, of vertical and horizontal fragmentation. In short, that "there is a vertical hierarchy, but territorially there is a competing horizontal level of authority held by provincial and local governments." (Shapiro 2012, 69) In practice, the argument goes, this leads to a new social configuration described by Watts as a concentration of power "neither at the top nor the bottom, but within a middle class of developers, polluters and local officials who are difficult to regulate, monitor and challenge." (Watts 2010, 290) This argument, that the Chinese central government, in this case, the Ministry of Environmental Protection (MEP), has insufficient capacity to enforce its laws and policies at lower levels – where the quest for short-term gains, often fuelled by corruption, trump central government priorities – is common enough that it can be regarded as a semi-official discourse in China, one that has been challenged by scholars such as Edin (2003), who suggested that the central government has in fact benefitted from the ability to be selectively effective.

Chinese officials at various levels, including during discussions and interviews that I have conducted, frequently refer to the enforcement challenge. It is also a common opinion among China scholars working in a number of fields (e.g. Huang 1996, Wang and Hu 2001) and among Chinese civil-society activists. One popular version of this discourse, used here by a non-elite actor in China – who does not explicitly refer to central state capacity, but nevertheless to the local government's ability to subvert good intentions through avarice – can be seen in an interview with an angry rural protestor quoted by Li and O'Brien:

> "Damn those sons of bitches [township and village cadres]! The Centre lets us ordinary people have good lives; all central policies are very good. But these policies are all changed when they reach lower levels. It's entirely their fault. They do nothing good, spending the whole day wining and dining. The only thing they don't forget to do is collect money." (Li and O'Brien 2006, 43)

Frequently, this concern has led scholars to attend to the systems of cadre evaluation that help determine how China's local officials' performance is measured (e.g. Wang 2013), exploring whether, for example, officials will be better rewarded for producing

a rise in GDP or adhering to central government environmental policies.

Such concerns and engagements are necessary but not sufficient. The risk of such an approach in isolation is that it may undervalue the social relations in which environmental policy implementation is enmeshed (Muldavin 2000), in favour of blaming “ignorant” or “corrupt” local officials. Van Rooij (2010) has unpacked the extent to which local protectionism not only implicates local officials, but also a wide range of actors, including sections of local citizenry often assumed by less nuanced accounts to be opponents of polluting developments. Furthermore, the spatial metaphor of verticality that underpins the enforcement challenge hypothesis is far from neutral and apolitical, for it helps to constitute the state’s very legitimacy.

Spatial metaphors

Ferguson and Gupta (2002, 981-2) have written about the ways in which states use spatial and scalar metaphors to “help to secure their legitimacy”, “naturalize their authority” and “represent themselves as superior to, and encompassing of, other institutions and centres of power”. They identify verticality, which “refers to the central and pervasive idea of the state as an institution somehow ‘above’ civil society, community and family” and encompassment, where “the state (conceptually fused with the nation) is located within an ever widening series of circles that begins with family and local community and ends with the system of nation-states.”

To these discourses I would add substitution: Strathern writes that in Melanesian concepts of accumulation, “acts, like relations, work to substitutive effect. Relations are not perpetually ‘made.’ Rather, relations are either made to appear or appear in their making; every new relationship displaces a former one.” (Strathern 1997, 304) Similarly, spaces are constituted in ways that displace former spaces. For example, Litzinger has described how the Critical Ecosystem Partnership Fund (CEPF), by operating as a de-territorialised, network-driven institution cutting across political boundaries, helped to change the values that were attached to certain endangered plants and animals in southwest China and therefore created a new spatial arrangement around the bio-region, displacing existing political arrangements (Litzinger 2006).

This discourse plays into a historical one in the Chinese context. In the late 1940s, the influential Chinese anthropologist Fei Xiaotong described pre-revolutionary governance in the countryside as having a distinctly vertical structure, with a clear gap between centre and locality:

> "In China, the distance between the ruler and his subjects is characterised by the saying 'Heaven is high and the emperor is far away.' With this kind of gap between the ruler and the ruled, those rulers who seem to exercise dictatorial powers really rule by allowing people in rural society to manage their own affairs." (Fei 1992 [1947], 113)

Yet the functioning of such dynamics in other regional contexts is also clear: Ferguson and Gupta provided ethnographic examples from the state bureaucracy in India in order to explore how governmentality was realised through practices of spatial encompassment and verticality in the Integrated Child Development Service (ICDS) programme. Surprise inspections and registers, they found, were "two devices by which verticality and encompassment were practiced." They argued that while the surprise inspection by a superior was a manifestation of organisational hierarchy, its particular form – a Jeep arriving in the village, announced by "the semiotic of dust" – was experienced as a "swooping 'down' into the geographical space" of the local worker. It was a "demonstration of the inequality of spaces" that marked the lower worker's ties to a particular locality (Ferguson and Gupta 2002, 987). It also resonates with Butler's writing on contemporary governmentality, building on Foucault, in which "tactics and aims have become diffuse, and in which political power fails to take on a unitary and causal form," yet the consequent loss of sovereignty has been "compensated through the resurgence of sovereignty within the field of governmentality," resulting in the emergence of very powerful, yet unaccountable "petty sovereigns" amid bureaucratic institutions (Butler 2004, 56).

In the case of newly emerging norms in Chinese environmental governance and governmentality during the early 2000s, one could cite as an analogous example the early, largely successful, Chinese environmental campaign in Yunnan province, southwest China, to protect the golden snub-nosed monkey (*Rhinopithecus roxellana*)

from the threat posed by commercial logging. Sun and Zhao explained how after a television report sparked a national outcry about the logging, the then premier Zhu Rongji swooped in to reprimand the local government:

> "The outraged Premier Zhu Rongji intervened personally. The county leadership was reprimanded and disciplined: the head of Deqin County had to 'confess his mistakes' to the Yunnan Forestry Department, and the deputy head of the county was removed." (Sun and Zhao 2008, 148)

Thus the Premier's intervention helped to encompass and bound the local officials in the region, ultimately tying the blame for the problem to the locality rather than the centre, while imbuing the central leader with the associations of great power, vision and surveillance that came with verticality. The intervention also worked to substitutive effect, in defining a new relationship between the space and the people in it: an interpretation seen as valid by the environmental campaign, but displacing a set of spatial relations that had given the local leadership legitimacy in managing natural resources. Thus approaches based purely on the "enforcement challenge" perspective have tended not only to underestimate the importance of social relations, but also to reify a vertical and encompassing central state, paradoxically drawing attention away from their role in creating environmental problems.

It is a phenomenon that was identified by one Chinese political writer in an article printed in a Hong Kong newspaper in the aftermath of the Yushu earthquake in 2010, which was subsequently reposted by bloggers, alongside photos of the earthquake. Ai Mo (2010) had watched the cleanup efforts after the quake, which killed more than 2,600 people in the country's northwest. She wrote that after "the 72-hour golden period for rescuing survivors from the ruins had passed, when the mammoth-scale cremations began, it seemed like something changed, the disaster area had become a stage." She wrote that the stage was set precisely as a background for the intervention of the top leaders: "President Hu and Premier Wen had the top, leading roles, given the nature of China, that is not anything to criticize, even the local Tibetans took the sincere tears of Premier Wen and the promise of President Hu that they will have new homes like the words of living Buddhas." In this context, media played an important but limited role for government image-creation, and tight government control of the

media was therefore important. Ai wrote:

> "On the CCTV television disaster programme in the evening, there were the names of the companies that had given one million, two million, 10 million or 20 million yuan, and individuals who had contributed and wanted to do something good. But what truly moved them was themselves. For the National Day of Mourning, the state organs forbade all entertainment activities, including on stage and online. The Yushu disaster area was far away, but they said in chorus, 'This evening we are all Yushu people.' My dears, I have to tell you, that is not wounded Yushu, that is only a stage."

As if to illustrate her point about media control (see Chapter 3), after the Yushu earthquake, overseas television channels were also shut off for the day, apparently in a gesture of mourning. Given the contentious nature of politics in the aftermath of such disasters, when questions are often asked about housing regulations or cleanup efforts — contention that in the case of Yushu would be further complicated by the ethnic politics of the largely Tibetan region – it is fair to suggest that this may have also had a stage-clearing, political element.

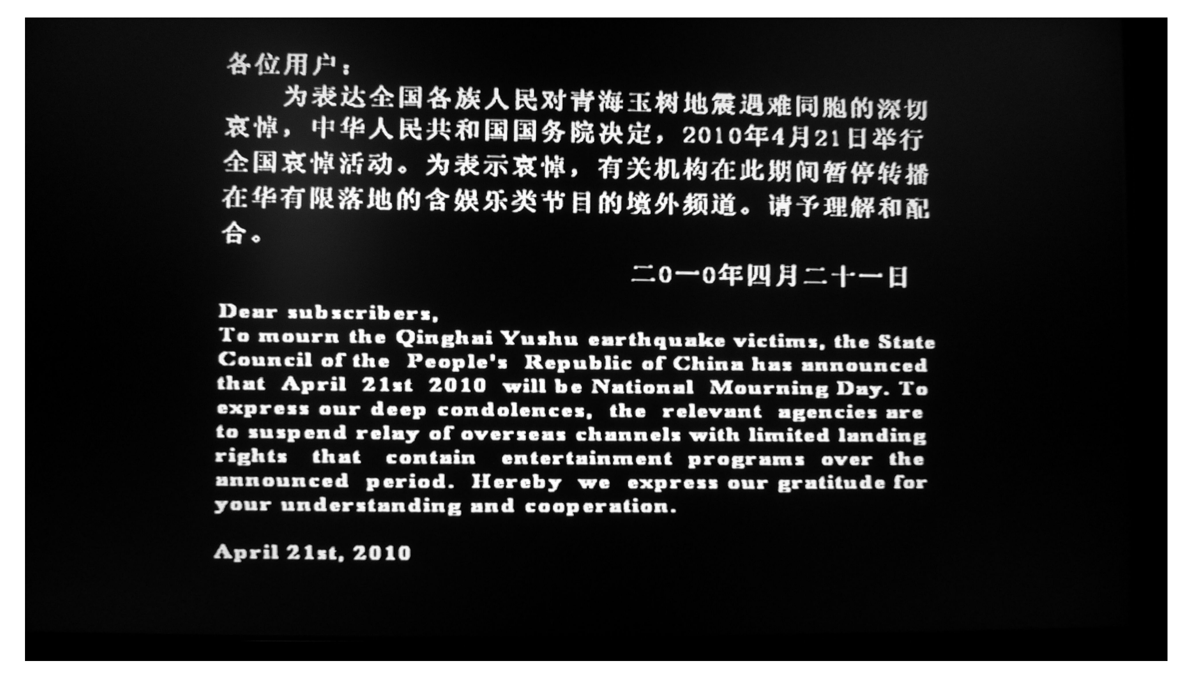


Figure 4. Photograph taken by the author of his television screen on April 21, 2010.

However, it is not only the central state that grasped the power of such strategies and attempted to wield them to spatial effect. Local governments, in attempts to shore up

their own legitimacy, have often copied these effects. Chapter 6 discusses an example of media representations of Premier Wen being used to vertical effect, but in an analogy on a local scale, which also suggests the trickery that is common among more commercially driven media outlets and so-called “workaday journalists” (see Chapter 3 and Hassid 2011) and the vigilance and strategic ingenuity of online communities that can expose them and indeed ridicule them (see Figure 6, Chapter 3 and Chapter 7), we could look to the way in which local officials have used photographic manipulation techniques to artificially “swoop” into local situations (see Figures 5 and 7) and enhance the perception of their verticality, quite literally in the case of Figure 5 below, where a group of local officials from Anhui province, in central China, have been superimposed by the side of an elderly woman, giving them the appearance of being unusually large.

Significantly, there is also some evidence of environmental movements drawing on encompassment as a strategy: Zhang and Barr (2013, 53) wrote about the power of the “surrounded gaze” (围观 pron: *weiguan*) as strategy, citing the example of the 2011 campaign against an advertising campaign by Snow Beer, a Chinese brewery, which organised a promotional trip for consumers to visit an ecologically sensitive region in Tibet. The campaign was organised through microblog updates, with a key figure explaining the type of eco-governmental effect they hoped to produce through the risk of reputational damage when the company was exposed on social media: “I know we cannot do much. But we can rely on the power of the public gaze… the fact that someone knows they are being watched is enough to have some impact.”



Figure 5. A widely circulated picture from June 2011, of three government officials from Huili Country Government, in Sichuan province, western China.



Figure 6. One of many spoofs of the Huili officials that circulated online in 2011.



Figure 7. Local officials in Anhui in 2013.

The green public sphere: opening up civil engagement?

Such a "surrounding gaze" is arguably a better way of seeing in the context of proliferating environmental risks than the focused "swooping" of the vertical state. Thus, Suttmeier (2008) has described how although Deng Xiaoping's Four Modernisations had taken economic growth to new and sustained heights, with hundreds of millions of people being lifted out of poverty, for many, a "Fifth Modernisation", of democratic political change, had been missing. This echoed a

common call among the generation that rose up in protest during 1989. However, Suttmeier added, in response to the proliferation of environmental risks during market reform, China now also needed a Sixth Modernisation: the development of decentralised institutions and values that could manage environmental and technological risks. Citing "revelations about the safety of Chinese products, deep-seated problems with industrial safety in China, and the increasingly serious degradation of China's environment," Suttmeier pointed to the corresponding "underdevelopment of institutions for managing environmental and technological risks" and the tendency to deal with such "problems through efforts to strengthen state regulatory agencies," which while necessary, was not sufficient and ignored international experience that pointed to the need for "decentralized mechanisms for identifying risks, for developing science-based health and safety standards, and for ensuring the accountability of public and private actors responsible for creating hazards." (Suttmeier 2008, 130)

Such a need has also increasingly been recognised by elite political actors and institutions in China, thanks in particular to the widespread recurrence of environmental contention across the country, as a consequence of environmental degradation, and increasingly, the public anticipation and anxiety associated with unseen phenomena such as toxic pollution. A seminal ethnographic account by Jing first described the process of "cognitive revolution" regarding pollution among Chinese citizens in the Reform Era. Jing encountered a group of villagers in Dachuan, in Gansu province, in northwest China, coming to a "comprehensive understanding of the damaging consequences of water pollution", particularly on human health (Jing 2000, 148). This understanding, Jing argued, then underpinned protests that resonated within local "cultural and symbolic life-worlds," drawing, for example, on the symbolic importance of kinship and fertility, and constituting a new type of challenge, characteristically based in law, led by activists who saw the potential of alliances with government, or exploitation of the fissures in the country's leadership. Such protests, he concluded, were "not meant to save an endangered environment for its own sake… Rather they are aimed at seeking social justice to protect the ecological basis of human existence." (Jing 2000, 159)

Official concerns about this shift and the widespread "social instability" it created led

to an adaptive response from parts of central government. The State Environmental Protection Administration had a relatively weak position in the horizontally and vertically fragmented context of poor enforcement mentioned above: for example, in 2004, after the SEPA vice-director Pan Yue launched a "storm" of suspensions on around 30 industrial projects that had dodged their EIAs, the companies all made "make-up" assessments to secure approvals and resume construction (Ansfield 2013, 141). SEPA therefore seized on managed public participation as a method for environmental legal enforcement and decentralised risk control – in other words, to create a more "surrounded gaze". Pan Yue announced this intention in a number of ways, but perhaps most memorably in what has been described as as "the most outspoken interview ever given by a Chinese official to a member of the foreign press," (Hilton 2013, 8) when, speaking to a reporter from *Der Spiegel* in 2005*,* he vividly described the scale of despoliation during the Reform Era, as well as threat that China's environmental crisis posed to China's future growth and prosperity:

> "This miracle will end soon, because the environment can no longer keep pace. Acid rain is falling on one third of the Chinese territory, half of the water in our seven largest rivers is completely useless, while one-fourth of our citizens do not have access to clean drinking water. One-third of the urban population are breathing polluted air, and less than 20 per cent of the trash in cities is treated and processed in an environmentally sustainable manner. Finally, five of the ten most polluted cities worldwide are in China… Because air and water are polluted, we are losing between 8 and 15 per cent of our gross domestic product. And that doesn't include the costs for health. Then there's the human suffering: in Bejing alone, 70 to 80 per cent of all deadly cancer cases are related to the environment. Lung cancer has emerged as the number one cause of death... the western regions of China and the country's ecologically stressed regions can no longer support the people already living there. In the future, we will need to resettle 186 million residents from 22 provinces and cities. However, the other provinces and cities can only absorb some 33 million people. That means China will have more than 150 million... environmental refugees." (Spiegel 2005)

The period that followed this interview saw the rise of a more independent watchdog

media, supported by an alliance of NGOs, intellectuals, lawyers and enterprising environmental officials led by Pan, who in 2005 deployed EIA-related laws to force a landmark public hearing in north-western Beijing at Yuanmingyuan Park, site of the Old Summer Palace (mentioned in Chapter 1). This ended in the removal of plastic sheeting laid, without approvals and consultation, to prevent seepage into a local lake, after opponents charged that it would damage plant and animal species and deplete groundwater levels (Ansfield 2013, 142) — a critique that first made its way into the public sphere in an article by Liu Jianqiang, published in *Southern Weekend* (see Chapter 3). Quantitative content analysis (Yang 2010) has shown that coverage of environmental issues in Chinese newspapers grew steadily throughout the 1990s, and began to accelerate through the following decade. This reflected a wider shift in discourses around the environment in China. Calhoun and Yang (2007) identified the early 2000s as having seen the emergence of "greenspeak": a discourse that, contrary to Mao's "war against nature", emphasised the fragility of the environment and the need for its protection. This discourse, they argued, had originated in the burgeoning green NGO movement and had contributed to the creation of a more pluralistic "green public sphere".

At the time Calhoun and Yang (2007) wrote their influential article, the nascent environmental movement was taking stock after a seeming victory on the Nu River — Asia's longest undammed river, known downstream as the Salween, as it enters Myanmar and traces the border with Thailand — in China's south-western Yunnan province. A proposed cascade of 13 dams had been shelved after a coordinated, NGO and media-assisted campaign led to an unprecedented intervention from the then premier Wen Jiabao. A number of accounts (e.g. Sun and Zhao 2008, Zhan 2011) also stressed the role of environmental NGOs in these movements and the emergence of an environmental civil society, albeit in a contested space. Ho and Edmonds (2008) defined this permitted sphere of NGO activity in environmental governance as "embedded activism", where the government was restrictive, but also selectively conducive to voluntary action in order to aid local enforcement of environmental regulations.

China's first registered, independent green NGO gained official recognition in 1991 in Panjin city, in the north-eastern province of Liaoning, in the form of a small bird-

conservation group called the Society for Protecting Black-Beaked Gulls (Boyd 2013, 45). But Friends of Nature, registered in Beijing with the Ministry of Civil Affairs in 1994, under the name the Green Culture Institute of the International Academy of Chinese Culture, is typically credited as China's first major green NGO, and it remains the country's largest non-governmental environmental group. The history and profile of its three founders helps to illustrate the space that had emerged in the environmental sphere, and the extent to which it was initially populated by reform-minded activists and writers: Wang Lixiong is an independent writer, whose work includes a dystopian novel of post-apocalyptic China, *Yellow Peril* (黄祸 Pron: *Huanghuo,* published 1991), and a number of provocative analyses of ethnic issues in Tibet and Xinjiang; Liang Xiaoyan was a lecturer in world history at Beijing Foreign Studies University, who had famously visited Tiananmen Square on the night of June 3, 1989, to express support for her students and to attempt to prevent the eventual bloodshed, subsequently becoming a prominent editor and intellectual; and the late Liang Congjie was a public intellectual, grandson of the famous nineteenth-century reformer Liang Qichao, and the son of Liang Sicheng, a planner and architect concerned with the heritage of historic Beijing, who in the early years of the revolution had unsuccessfully lobbied Mao to preserve the city's walls from destruction (Hilton 2013, 5).

By 2008, there were 220,000 officially registered NGOs in China and 3,539 environment NGOs registered with All China Environment Federation. Of these, 1,309 were "Government-Organised Non-Governmental Organisations" (GONGOs), 1,382 were school environment societies, 508 were "grassroots organisations" and there were 90 branches of international groups (as well as 250 NGOs recognised in Hong Kong, Macao and Taiwan). Estimates of the number of unregistered NGOs in China go up to around 3 million. While a number of studies have examined in detail the extent to which China's embedded, partially controlled environmental NGO sphere constitutes "civil society" and the implication of this for Chinese state and society (cf. Pils 2012, Spires 2012, Hsu and Hasmath 2012, Zhang and Barr 2013), the definitional debate is less compelling than Shapiro's approach (2012) in asking, using a framework from Keck and Sikkink (1998), what types of politics green NGOs have been able to pursue in the Chinese context, concluding that they engage

successfully in forms of “information politics”, “accountability politics” and “symbolic politics”, even if they do not always engage effectively in, for example, political advocacy and campaigning.

The contours of this have been explored by Wu and Chan (2012), who showed how the Chinese state has become deeply involved in the development and regulation of civil-society organisations to varying degrees, determined by factors including the regional scope of NGO activity and its funding source, in a framework they term “graduated control”. These mechanisms of control are geared towards social stability, yet co-exist with a need for civil organisations to provide services previously catered for by a state that “retreated” from many sectors in the Reform Era. These controls are typically enforced through the *Regulations on Foundation Management* (1988), as well as the post-Tiananmen *Regulation on the Registration and Management of Social Organisations* (1989), and a number of constraints therein, including the rule of exclusion, that no more than one social organisation should exist per sector, and dual supervision, that independent organisations need a government sponsor before registering with the Civil Affairs Ministry as one of the three types of social organisations: *shehui tuanti* (社会团体), a membership-based association, highly restricted as they are seen as the most effective means of social mobilisation and a potential threat to the CCP’s political authority; *minban feiqiye danwei* (民办非企业单位), a non-governmental, non-profit organization; or *jijin hui* (基金会), a charitable foundation, some of which, such as the Shenzhen-based One Foundation, in the southern province of Guangdong, have recently begun advocacy work in a similar fashion to NGOs. (Guangdong has recently become noted as a pilot province for more relaxed regulations regarding social organisation registration; Shenzhen, in particular, has seen the relaxation of the dual supervision rule, for example.)

Such concerns of dominant actors and institutions about the need for political control, and the accompanying growth of a powerful, bureaucratised discourse of “stability maintenance” (维稳 pron: *weiwen*), were spurred by the rising number of events, characterised officially as “environmental mass incidents” (环境群体性时间 pron: *huanjing quntixing shijian*), which are now thought by some government-linked academics to constitute the most common type of social discontent in China. While

some have estimated the number of environmental mass incidents at 5,000 per year (Shapiro 2012), others put the figure much higher. As mentioned in Chapter 1, Chen Jiping, formerly of the Chinese Communist Party's Committee of Political and Legislative Affairs, has said that China now sees 30,000 to 50,000 "mass incidents" every year, with the environment as the most frequent catalyst (Bloomberg News 2013). As the Chinese academic Tang Hao described it aptly in a media article:

> "In China, pleasant living environments are getting harder to find – and scarcity leads to competition and conflict. As China has no mechanisms in place for managing such competition, the outcome is unruly conflict." (Tang 2013)

As this indicates, while such incidents initially started to arise where legal or political avenues had failed – for example, in cases of rural villagers seeking compensation for pollution incidents or demanding better local pollution control – the model has increasingly given way to another form of environmental contention: the so-called urban "not-in-my-backyard" (or NIMBY) protest, or "stroll" (a common euphemism: 散步 pron: *sanbu*) in response to anticipated pollution. The first major, and subsequently paradigmatic, example of this form of protest occurred in Xiamen, in the south-eastern province of Fujian, in 2007, when a prominent segment of the newly enfranchised urban middle class made clear that while they had been able to accumulate capital, particularly in the form of property, this was felt not to have been matched with decision-making rights, particularly with regard to urban planning and its potential future impact on the environment and public health.

The social, spatial and structural dimensions of this crisis have been obscured by simpler accounts of the event as a victory for civil society. In the journalist Jonathan Ansfield's (2013) account, which I commissioned and edited, based on our discussions in 2010 of the dynamics of the protest in 2007 as he had reported it for *Newsweek* magazine, the dynamics of evolving environmental protest in that time were laid bare – including the emergent role of new media and mobile technologies, class dimensions, geographic aspects and the extent to which NGOs played a relatively minor role. In 1980, the government had designated Xiamen as one of four

Special Economic Zones to lure foreign trade and investment, particularly from overseas Chinese. In 1989, the then Premier Li Peng flew in to authorise the establishment of a "Taiwanese Investment Zone", on the peninsula south-east of Xiamen island, in an area known as Haicang, which was the following year designated a base for petrochemical development, in a move designed to court Taiwan's then most powerful businessman, Wang Yung-ching, of Formosa Plastics. The deal fell apart in the protracting bargaining that followed, but the baton was taken up by another Taiwanese businessman, Chen Yu-hao, a fugitive from corruption charges in Taiwan, with strong links to the CCP in Beijing. In 2001, Chen started to pursue approval for a large plant manufacturing paraxylene (PX), an upstream petrochemical that can inflame the eyes, nose and throat – and in cases of overexposure may impair the nerves.

As Xiamen had prospered in the intervening years, it had sprawled, and Haicang was already developing into a residential zone, with a building boom spurred predominately by the city government-controlled Xiamen Haicang Investment Group, which had ambitions to make the area into a centre for luxury developments, built around its flagship residential project Future Coast, which opened in 2000. This, and a resulting property boom, had attracted a great number of new residents from around the country: the city government had offered local urban *hukou* (户口 trans: *household registration*) – the exclusionary residency permits that afford Chinese citizens local benefits – to people who bought apartments in Haicang, in order to bolster the suburban property market. By June 2007, Haicang had 23 different projects under development or up for sale (Ansfield 2013, 145-152).

Significantly, many of the earliest opponents of the PX project were newly socially mobile residents of the area, who had arrived from poorer provinces. A newly constructed form of middle-class, urban citizenship was characterised not only by the potential to accumulate property, but also to interpret and orient towards forms of decision-making that affected the environment and asked questions about the direction of scientific and technological progress. Local online residents' forums filled with discussions about the emissions from Xianglu, a small chemical plant that was already operated by Chen Yu-hao, and increasingly, with concerned messages

about the proposed PX project. Property owners started writing letters to the district government, the mayor's office and the local EPB, but received no response. Residents expressed concern they could not find the EIA that had granted the project passage. Ma Tianan, the founder of Green Cross, Xiamen's first environmental NGO, who had previously worked for property developers on Haicang, had tried to mobilise residents to oppose the project, drawing on her connections in the local EPB, but to little avail. NGOs played a very small role in the contention that followed – Green Cross, in fact, later would turn away requests from concerned citizens who wanted to know more about the demonstrations that were brewing. In fact, it was a chemist at Xiamen University, Zhao Yufen, who would catalyse the protest. Zhao was a member of the China People's Political Consultative Conference (CPPCC), a political advisory body, who had addressed the city government about the need for a scientific review of safety hazards at the plant but had been rebuffed (Ansfield 2013, 154-162).

During the annual national meeting of the CPPCC in 2007, Zhao had submitted "A Proposal Recommending the Relocation of the Xiamen Haicang PX Project", which had been adopted as a top recommendation of the body during that session. This proposal may have overstated the certainty of the risks of the PX plant, suggesting that it would drive up rates of cancer and birth defects, and overstating the required buffer zone for such plants according to international norms. However, Zhao and her co-authors had questioned the process by which the PX project passed its original EIA and brought attention to the fact it had not been released to the public. That spring, the project became a topic of furious and open public debate. In the summer, a mysterious mobile-phone message, forwarded thousands of times, called on city residents to "stroll" against the project, which, it said, would be like "an atomic time bomb that has been released on Xiamen island". The resulting demonstrations – which involved thousands of people from many communities across the city, lasted two days, and were tentatively supported by liberal-leaning media outlets like *Southern Weekend* and reported live by bloggers and online activists from around the country, some of whom travelled to Xiamen just to cover the strolls – eventually forced officials to freeze construction pending a new EIA process (Ansfield 2013, 165-174). One of the protestors, a young woman, emailed me at the time about the demonstrations, writing: "Most of the protestors are the ordinary residents in Xiamen like me. We just have a very simple aim: we want to have a healthy living environment for our family, for our

children, for ourselves." I asked her about the investment that such a project could bring to the city. "This is not a small amount for anybody," she wrote. "But could the money buy us life and health?"

The strategic environmental assessment and public review that followed were thanks to the enterprising environmental official Pan Yue: as Ansfield (2013, 175) showed, he had seen a high-profile opportunity to "advance his 2006 regulatory initiative to promote the role of area assessments and public review in the planning process." Again, this official intervention took the form of a swooping in from the vertically imagined and encompassing Beijing. The rather stage-managed process that then followed allowed the plant to be relocated down the coast, near the poorer, less well organised and thus more vulnerable communities down the Gulei peninsula at Zhangzhou. In July 2013 there was a blast at this plant, sending 50-metre-high flames into the air, which resulted in no casualties, but underscored fears about the development (Li 2013). Pan Yue said that the Xiamen PX Project had not been "a victory of people's opinion," as some had cast it, "but manifested a systematic problem. It shows the demands of the middle class on the environment. It shows the relationship between environmental assessment, the middle class and the environment." (Ansfield 2013, 143)

Ansfield summed up the three contrasting frames for understanding the Xiamen PX protests – and it is precisely the tension between these frames that has shaped the history of post-Xiamen environmental policy:

> "Some would call the Xiamen PX saga a backlash against the abuse of power and lack of public accountability in the city planning process. Others would term it more of a battle between vested-interest groups over the future of a neighbourhood. In the most Machiavellian analysis, it could be a read as an allegory for the adaptive capacity of China's single-party apparatus." (Ansfield 2013, 139)

A new constellation of social actors, mobilised and networked by new and traditional media forms (see Chapter 3), capable of exploiting fissures in the Chinese leadership, but increasingly independent of NGOs, had arisen. Mertha (2008) noted the extent to

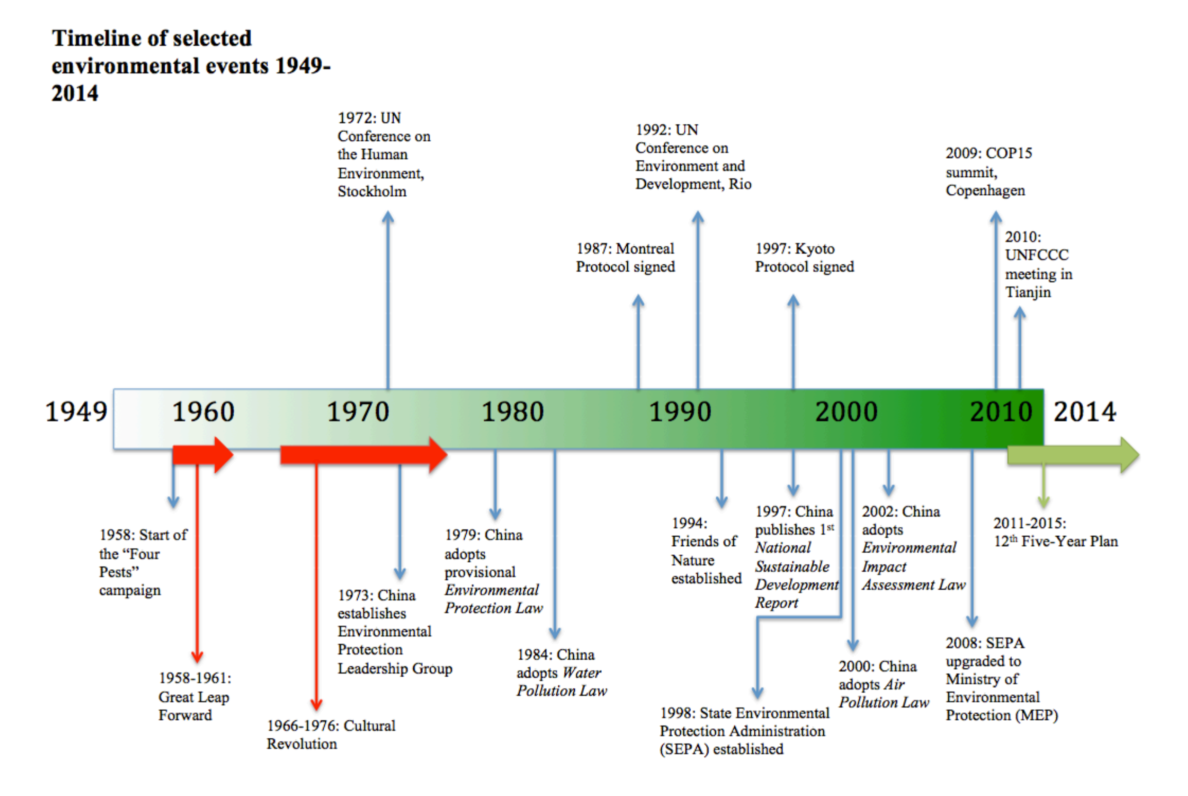
which such developments expanded the dynamics of the "fragmented authoritarianism" framework, to include "additional actors, sub-provincial officials, the media, NGOs, and individual activists" (Brettell 2009, 126). However, the academic narrative of China's environmental movements has largely overlooked the process of closure that followed the brief opening initiated by Pan Yue.

In March 2008, SEPA was "upgraded" to ministerial status, as the Ministry of Environmental Protection. While this might have given the institution greater power within a fragmented system, it coincided with a corruption probe into Pan Yue's camp in the ministry, which jailed his colleague Wang Pangpu, who was accused of a collusive fundraising tactic that required companies to donate to a "slush fund" in the process of completing their EIAs. Pan, questioned for months, was sidelined and while still in his position to this day, has been effectively silenced (Ansfield 2013, 141, Watts 2009). He Gang (2008) pointed out, shortly after the ministerial upgrade, that the MEP was still in a weak position vis-à-vis powerful economic planning units such as the National Development and Reform Commission. With Pan's effective downfall and the severing of the link between a nascent civil-society movement and the ministry, the upgrade looked more like capture, which effectively precipitated the retreat of the MEP from political life, in favour of ambitious "low-carbon" initiatives launched elsewhere in elite circles. In the remaining part of this chapter, I will briefly explore the roadmap to this closure and how it intersected with climate-change policy.

Low-carbon development: climate change and closure

Most scientists agree that climate change is taking place, caused in part by anthropogenic emissions of carbon dioxide (Cook et al 2013, IPCC 2007a, Oreskes 2004). These emissions persist in the atmosphere for centuries. In the decade after 2002, annual economic growth in China accelerated from 4% to 11% on average, thanks in part to rising exports, as China became the so-called "workshop of the world". During that period, China's CO2 emissions increased by 150% (PBL Netherlands Environmental Assessment Agency 2012). One study concluded that in 2004, net exports accounted for 23% of China's total carbon emissions, contending that the extent of "exported carbon" should lead to "some rethinking by government negotiators as they work towards a new climate change agreement", since a "focus on

emissions within national borders may miss the point.” (Wang and Watson 2007, 1)



However, the financial crisis of 2007 helped to complicate this perspective. In 2007, China became the world’s largest emitter of carbon dioxide by volume (PBL Netherlands Environmental Assessment Agency 2007), and the following year, two-thirds of the total global increase in emissions came from China alone. The government’s large economic stimulus package in late 2008 helped to avoid a decrease in annual economic growth, which many countries suffered during the global recession of 2008–2009, and as emissions fell in Europe and the United States, China’s continued to climb. In 2011, China’s CO2 emissions jumped by 9%, consistent with an increase in thermal power generation of 14.7%, mostly from coal (PBL Netherlands Environmental Assessment Agency 2012). China’s coal-fired power sector is now the world’s largest anthropogenic source of CO2 emissions (Harris 2010). The total volume of emissions, of course, is not the same as a country’s per capita emissions. But in recent years there has been a surprising convergence between China and the industrialised west even on this metric: from 1990 to 2011 in China, CO2 emissions per capita increased from 2.2 to 7.2 tonnes, while they decreased across Europe from 9.2 to 7.5 tonnes per capita (PBL Netherlands Environmental Assessment Agency 2012), putting the average person’s emissions in China and Europe roughly on a level.

Concerns among government elites about China's vulnerability in the context of a changing climate have encouraged national policies oriented towards a number of "low-carbon" objectives: for example, China published the first national climate-change plan of any developing country (National Development and Reform Commission 2007). China's policies on climate change, as determined by influential economic planning body the National Development and Reform Commission (NDRC), are officially guided by six principles: to address climate change within the broader framework of the country's "national sustainable development strategy"; to follow the principle of common but differentiated responsibilities; to address both climate-change mitigation and adaptation; to integrate climate change-related policies with programmes for "national and social economic development"; to rely on technological advancement for effectively mitigating and adapting to climate change; and to "actively and extensively" participate in international cooperation on climate change. Harris (2010) summarises these principles as a signal that climate change is taken seriously, but not to the extent it takes priority over other national objectives. Zhang and Barr (2013, 7) suggested this constitutes an attitude of economic pragmatism, which opens the central government to criticisms from Chinese environmentalists that climate-change policy is seen "not as a cross-sectoral environmental issue, but largely as an economic one."

Undocumented in the academic literature, but apparent from my ethnographic observations throughout the period, is that this move towards low-carbon development options coincided with the closure of civil-society and public-participation-oriented options in China's approaches to sustainability, a closure that perhaps reached its apotheosis in the silencing of Pan Yue. The 11th Five Year Plan, from 2006 to 2010, set by the NDRC, stressed a shift toward building the "harmonious socialist society", partly through stronger environmental and energy-saving measures (Fan 2006, 708; Geall and Pellisery 2012). Many of these programmes, such as measures to close small, inefficient plants and the Top 1,000 Enterprises Program for industrial energy efficiency, signalled support for large, Chinese enterprises and fostered significant technological upgrades for these firms. But it was the most high-profile goal in the plan that attracted interest and controversy: to reduce the country's energy intensity (energy consumed per unit of

gross domestic product) by 20%.

This was the first quantitative and binding goal on energy intensity reduction in a Five-Year Plan, and one that translated into an estimated annual reduction of over 1.5 billion tonnes of carbon dioxide emissions. However, against the background of the global economic crisis and the stimulus measures that ensued, local authorities struggled, some reportedly cutting power supplies to factories, traffic lights, and even hospitals in a late rush to meet the targets. Although China ultimately achieved a 19.06% energy intensity reduction over the 11th FYP, less than a percentage point shy of the 20% goal, the rush by officials to meet targets not only underscored how target-responsibility systems had begun to take account of environmental goals, but also how narrow governance and implementation-focused approaches to environmental policy may be insufficient, without attention to wider uncertainties in social contexts and dynamics — and indeed, how a narrow focus on environmental goals could hurt society's most vulnerable, and undermine social justice.

China brought in further goals on carbon intensity reduction during the period of the 11th FYP: in the run-up to the United Nations Framework Convention on Climate Change (UNFCCC) 15th Conference of the Parties (COP15) conference in Copenhagen, Denmark, in 2009, China pledged to reduce, from a 2005 baseline, the carbon dioxide intensity of the economy (in other words, CO2 emitted per unit of GDP) by 40%-45% (Seligsohn 2009). The current, 12th Five Year Plan (2011-2015) is similarly ambitious: resource and environmental goals account for 33.3% of total measures in the plan, up from 27.2% in the 11th FYP (Hu and Liang 2011). The plan contains China's first binding carbon intensity target: a 17% reduction from 2011 to 2015, as well as a 16% reduction in energy intensity. It also sets out considerable investments in environmental protection and clean technologies, amounting to more than 3 trillion yuan (US$476 billion) over five years, and establishes seven "Strategic Emerging Industries" as pillars for future growth: biotechnology, new energy, high-end equipment manufacturing, energy conservation and environmental protection, clean-energy vehicles, new materials and next-generation information technologies. China has also become the leading manufacturer of most renewable energy technologies; in 2010, it was the largest wind energy market in the world and largest user of clean energy overall; and the same year it invested US$54.4 billion in clean

energy, more than any other country (Lewis 2011).

However, there is probably no clearer indication of the extent to which the 12th FYP represented a closure of options, from public participation towards technocratic imperatives that favoured powerful vested interests, than the 2011-2015 energy sector blueprint, released by the State Council and based on the 12th FYP, which, for example, confirmed plans to "actively push forward with hydropower development" on the Nu River, famously shelved by protests in 2004, as well as the Lancang/Mekong and Yarlung Zangbo/Brahmaputra River basins – not only ecologically sensitive and seismically active regions, but all of them internationally shared rivers, and in the case of the Brahmaputra, particularly sensitive from a geopolitical perspective. Large hydropower projects have a long history of lock-in as a socio-technical pathway in China, where mutually supporting powerful actors, institutions, political interests and discourses of progress and rationality through technoscience, stretching back to the May Fourth Movement and the Three Gorges Dam, have tended to maintain dominance. This had waned in the moment of increased public participation in environmental decision-making around 2007, but the hydropower industry received a push in the 12th FYP, successfully re-imagined and presented as a low-carbon source of electricity.

Similarly, the 12th Five Year Plan also promised a kickstart for China's nuclear industry, dubbed a "Great Leap Forward" by critics, such as the prominent physicist He Zuoxiu (He 2013), who fears the proposed boost is rash and unsafe. China plans a four-fold increase in its nuclear capacity, to at least 58 gigawatts, by 2020. The country currently has 17 nuclear power reactors in operation, but another 30 under construction, and more about to start construction (World Nuclear Association 2013). Local authorities in Guangdong province, in southern China, recently bowed to citizen pressure when they cancelled the construction of a US$6-billion uranium processing plant, after hundreds of protesters took to the streets, having organized the demonstrations through social media and online messaging services. The city government continued to defend the project until the last moment, finally issuing a one-line statement on its website: "To respect people's desire, the Heshan government will not propose the project." (Ip 2013) Conflicts like this point to the likelihood that China's attempts to meet its climate goals may increasingly clash with other

ecological and social concerns and that the incommensurability of certain pathways and policies should demand greater public discussion and earlier-stage debate. However, the push towards a consensus around a "mass line" technocratic perspective on low-carbon development is striking.

One of the 12th FYP's chief architects, the prominent economist and intellectual Hu Angang (Hu and Liang 2011), praised the plan, writing that climate change "presents a long-term and all-encompassing challenge for China. It demands a long-term development strategy and broad goals, as well as near-term action plans and concrete policies." He wrote that the Five Year Plan's strength lay in the fact that "long-term policy continuity is vital for dealing with issues like climate change…This is where China's policymaking framework shows its strengths." Hu is a good example of the importance of academics in shaping China's green policies, seen also in influential academic publications, such as the *Blue Book of Low-Carbon Development*, compiled by Tsinghua University (Zhang and Barr 2013, 15). However, writing two years later in official media, Hu (2013) would make clear his opposition to governance incorporating civil society (instead promoting the notion of a "people's society" ruled by the "mass line" set by the Party and government) as a component of the plan:

> "The Chinese people's livelihoods have improved step by step. In the first decade of this century, great results were achieved in human development. The 12th Five Year Plan could be called a model plan for human development.
>
> The mass line [a standard Maoist methodology of governance] is the mode of governance for the people's society. From the perspective of governance, the people's society must innovate in social management and adhere to the mass line. This is different from the theory of civil society, since in the people's society, the government and the masses are integrated; they do not stand apart. There is no conflicting relationship between the government and social organisations, but a relationship of harmony and unity." (Hu 2013)

Hu's essay caused some consternation among foreign China-watchers, who had assumed Hu's advocacy of low-carbon goals allied him with more liberal stances on public participation in environmental decision-making. However, it was less

surprising to those environmentalists and journalists in China who had kept a closer eye on the dynamics of powerful actors, institutions and discourses in environmental policy. Yu Xiaogang, an anthropologist turned writer and campaigner on dam-building in China's south-west had already noted how the 12th FYP reflected the powerful influence of Party-linked interests in the hydropower industry. He said:

> "The Chinese government wants to improve policy and reach 'political civilisation', but we think that the SOE monopolies have a triple role: they are company owners; they are decision-makers (or at least they can capture the decision-makers); and they also manage the market. So they control everything and that's not good for the free market or 'political civilisation'. Also it creates conflict with the people, because this combination of power and capital often works against the people's interests, against democracy and against public participation… We have realised that the 12th Five-Year Plan was influenced by these interest groups. Before this plan was finalised, we observed a lot of academics, official insiders, like the National Energy Administration, decision-makers and think-tanks combined saying that NGOs and civil society have misled the leaders under the 11th Five-Year Plan and that hydropower's environmental and social impact was not negative. They portrayed it as a conspiracy between the international community and civil society to attack hydropower development. Also they said that because of the frozen period during the 11th Five-Year Plan, we now need a 'Great Leap Forward' in dam building." (Liu 2013, 219-220)

In the case of the Nu River dams, the developer is Huadian, one of China's Big Five state-owned electricity companies, under the direction of the powerful government institution the State Council. The company president is Yun Gongmin, who, characteristically, is also deputy secretary of the company's Communist Party branch.

Conclusion: Dynamics new and old

Thus, we have glimpsed the complex dynamics that led to and characterised the particular environmental moment that existed in 2010, when the fieldwork for this dissertation was conducted. While there have been considerable changes since the

Maoist Era, when information was tightly controlled by the state and large scale campaigns – either technocratic or ideological in character, but always bureaucratic in nature – suppressed participatory approaches to environmental knowledge and decision-making, certain vested interests, technological pathways and forms of political repression and dogmatism have survived and contributed to closure in environmental decision-making. Such high degrees of ideological uniformity and utopian urgency subsided, but new drivers of environmental degradation were set in motion. These included the loosening of government and community control of resources and an unprecedented exposure to market forces, which created a powerful, collusive alliance of money and power at the local level. This created a new structural arrangement, in which a weakened central state made up for lost capacity through symbolic spatial efforts that included the introduction of powerful discourses of verticality and encompassment that could blame local officials, while affording legitimacy to the central government.

Such a structural arrangement was complex, but it allowed an opening in which environmental movements, initially in the form of NGOs and later in more spontaneously grouped protests organised via new media technologies and supported by enterprising officials, were able to explore diverse, multiple options for greater sustainability and participatory approaches to environmental decision-making. This period of opening up, however, seems to have been eclipsed: whether thanks to the economic crisis, a growing anxiety about social stability sparked by middle-class protests, a constellation of international actors, institutions and discourses advancing a technocratic vision of low-carbon development, or some combination of all three,

China's trajectory in the 12th Five Year Plan has turned towards an expert-led consensus on the need for climate-change action that has incorporated few perspectives from the citizens and NGOs that initially pioneered such ideas in the Chinese public sphere. As Hilton (2013, 12) put it, when these green ideas were first voiced, they "were thrown down as a challenge to the top-down orthodoxy of 'develop first, clean up later,'" yet today, they are "encompassed within the new official orthodoxy, one of sustainability and circular economy," with "the approach to adjustment" remaining "as top-down as ever":

> "The state might have changed its views, but its methods, and its view of the subordinate role of non-state and non-Party actors and organisations, have scarcely altered." (Hilton 2013, 12)

But what was that public sphere, and how was it constituted — and how could Chinese reporters respond? The next chapter explores this question.

Chapter 3: Media

This chapter introduces the notion of "issue entrepreneurship" and the "edge ball" space — central, theoretical elements of this dissertation that comprise an important context for the ensuing chapters — by exploring the history and contemporary contours of journalism and the public sphere in China's Reform Era, and by explaining what these can tell us about governance of the environment and the framing of climate-change issues there. Having examined the emergence of large-scale urban environmental protests in China over the past five years in Chapter 2, this chapter delves further into their interaction with traditional and new forms of media, with some attention to a largely undocumented protest at Tiger Leaping Gorge, in southwest China, as well as an examination of the effect of new modes of informational governance in China, including transparency laws, and their implementation and use by journalists. The chapter analyses the emergence of new professional aspirations for Chinese journalists in the Reform Era and new models and typologies of doing journalism, including environmental journalism, and its relationship to international genres and institutions around environmental writing, before discussing the role of environmental journalists in Chinese society through a number of local analytics, in particular, the "edge ball" and the "three Cs" — control, change and complexity (also rendered as chaos, or confusion). This is necessary context for understanding the journalists among which I conducted ethnographic fieldwork, and whose engagement with climate-change issues forms the core of the arguments presented in Chapters 4, 5 and 6.

Guiding public opinion

The China Environmental Sciences Press was founded at the beginning of the Reform Era, in 1980. The following year, China Central Television broadcast the country's first environmental programme, *Animal World* (动物世界 pron: *Dongwu Shijie*). China's first national environmental newspaper, *China Environmental News* (我国环境报 pron: *Woguo Huanjingbao*), started in 1983, the same year that SEPA and the United Nations Environment Programme (UNEP) jointly launched *World Environment* (世界环境 pron: *Shijie Huanjing*) magazine. In the early 1990s, the government began to focus on the "guidance of public opinion" (舆论导向 pron:

yulun daoxiang) regarding environmental protection, an official term for the control of information through the media, introduced by the Central Propaganda Bureau in the aftermath of June 4, 1989, designed to prevent, the words of a Propaganda Bureau commentary on the diktat, "public opinion [that] wrongly pushes matters in the direction of chaos" (Sam 2011). State media reporters from Xinhua, *People's Daily*, *China Environmental News* and *Science and Technology Daily* attended the UN "Earth Summit" in Rio de Janeiro in 1992. The following year, the National Peoples Congress's Environmental and Resources Protection Commission jointly launched the "Chinese Century of Environmental Protection" campaign with the Propaganda Department and the State Council. Even among liberal-minded academics in China today, the emphasis in discussions of environmental reporting is typically on the guidance of public opinion, often accompanied by the suggestion that China's public are irrational when it comes to environmental decision-making: their emotions need to be properly controlled through better, more effective environmental propaganda, and not through greater openness.

In keeping with the vertically imagined environmental governmentality outlined in Chapter 2, where central government capacity was increased through the metaphorical "swooping in" of higher institutions and actors, with environmental problems localised and bounded in their framing, central government media in the Reform Era were increasingly encouraged to expose local environmental problems. For example, a coordinated campaign, managed by SEPA, was launched during the late 1990s along the Huai River, which led to a crackdown on polluting companies. Today, certain environmental media campaigns are still launched from the centre, including one that opened up environmental criticisms of the Three Gorges Dam after years of silence.

From 1989 until 2007, propaganda officials ensured that criticisms of the Three Gorges Dam would not be published, which, as mentioned in Chapter 2, had been prominently championed by Li Peng. One of the only journalists who did report critically about the Three Gorges Dam was Liu Jianqiang, then a senior investigative reporter at *Southern Weekend*. In 2004, he wrote about the sediment accumulation caused by the dam, then still under construction. Liu found that the sediment had effectively destroyed the port in Chongqing, one of China's most important inland

docks. The Three Gorges Dam, he said, had become like a "noose wrapped tightly around the neck of the Yangtze River shipping industry. Many big ships could now no longer pass through the locks." He saw that "big trucks needed to roll off ships before they reached the dam, roar past the dam and then board again once they were past." However, he was only permitted to write the report on agreement that a draft was sent to the Three Gorges Project Corporation for vetting before publication. The corporation ordered him to cut out the parts about the sedimentation of Chongqing port "for the sake of 'national interests'" and claimed that the experts who had criticised the project were "enemies of the state". Liu refused, leaving the city and turning off his mobile phone. *Southern Weekend* took a risk and the article was published, becoming one of very few openly critical articles about the dam that had been published in a major newspaper (Liu 2013, 206-209).

However, in 2007, shortly after its construction had finished, something changed. State media — reflecting, one can safely conclude, some shift in the closed dynamics of fragmented-authoritarian decision-making — started warning prominently about the risks of "environmental 'catastrophe' from [the] Three Gorges Dam". The previous era of censorship was replaced with a new line: state media warned that "Chinese officials and experts have admitted the Three Gorges Dam project has caused an array of ecological ills, including more frequent landslides and pollution, and if preventive measures are not taken, there could be an environmental 'catastrophe'". Thus it was announced that publications were permitted to report critically about the project and its potential environmental risks (Xinhua 2007b). During 2010, editors informed me that, similarly, censorship restrictions had been lifted on stories about heavy metal and cadmium contamination in rice and other crops in southern China, leading to a rash of reporting that largely blamed the issue on the localities (cf. Gong 2011).

Government-endorsed environmental discourses – many of them a far cry from the "war against nature" – continue to be propagated, and have reached a new height recently, with "Ecological Civilization" – a buzzword that first emerged around 2007, but has been revived in 2013 by President Xi Jinping. *China Daily*, an English-language Party mouthpiece, wrote in a definitive editorial on the subject:

> "[Ecological Civilization] is not a term the Party has coined just to fill a

> theoretical vacancy in its socialism with Chinese characteristics, but rather a future-oriented guiding principle based on the perception of the extremely high price we have paid for our economic miracle." (China Daily 2007)

Two years after this editorial, travelling in rural Yunnan, I saw government signs proclaiming the need to advance and support Ecological Civilization (see Figure 1) attached to homes and by roadsides. Yet despite the persistence of central information control and propaganda campaigns, of the factors that transformed Chinese society in the Reform Era, one of the most significant has been expanded public access to information.

At the end of the Cultural Revolution in 1976, the media system remained the mouthpiece of the Communist Party. Until the 1990s, all newspapers were subsidised by the government, either as official publications of the Party – like *Yunnan Daily,* discussed in Chapter 2 – or specialised papers affiliated to mass organisations, such as *China Youth Daily*, the official newspaper of the Communist Youth League of China (Akhavan-Majid 2004). However, following the authorisation of advertising in newspapers in 1979, newspapers under less central control started to gain in importance. Local papers started punching above their weight: some became known for their reporting about anywhere *except* their home province, such as the influential Guangzhou-based newspaper *Southern Weekend*. Government-run newspapers began to spawn so-called "child" papers as money-makers. Media outlets multiplied rapidly. Since many were profit-oriented, they increasingly competed for potential audiences by covering issues of concern to readers, rather than simply reproducing state directives. With rising concern about increasingly visible environmental problems, environmental reporting grew to become an important and dynamic part of this changing media landscape (Geall 2013b). By 2007 (the latest figures available) there were around 2,548 radio and TV stations, according to market research firm China Media Monitor Intelligence, 2,000 newspapers and about 10,000 periodicals and magazines (Grabow and Rieck 2008, 45). The circulation of once-dominant Communist Party-controlled newspapers, such as *People's Daily,* had dropped significantly due to the increased competition with private and local government-owned outlets.

China's oldest and largest environmental NGO, Friends of Nature, has conducted regular studies that show an increasing frequency of environmental terms in Chinese newspapers since the mid-1990s (Yang 2010, 104). Journalism about climate-change issues also significantly increased in quantity, originality and detail over the following decade, notably around 2007, after the publication of the Intergovernmental Panel on Climate Change Fourth Assessment Report (IPCC AR4), which addressed scientific, technical and socio-economic aspects of global warming. Tolan (2007) found that while that year marked the emergence of China's first media coverage linking global warming and greenhouse-gas emissions, there was a strong emphasis throughout on China's inability to address the problem without sacrificing its economic development. According to Painter's 2007 study of television coverage of the IPCC AR4 reports (cited in Shanahan 2009), China's CCTV-1 news bulletin covered the report on the science basis, but not the subsequent reports on mitigation and adaptation. In 2010 a number of prominent local-government owned or private Chinese newspapers, including *Southern Weekend* and *21st Century Business Herald* (both published by the Guangdong-based Southern Group), introduced regular environment, climate-change or "low-carbon" sections. Popular websites, portals and online messaging services, such as Tencent QQ, also set up environment "channels" that year, and a wider range of opinions and angles about climate change were represented by these outlets than ever before. These will be discussed in more detail below and in later chapters, but they range from a nationalistic questioning of the science base, to advocacy of strong, unilateral action on climate change; from discussion of local impacts on communities facing desertification, to the economic challenges facing the renewable energy sector.

Control, change and complexity

Thus in the Reform Era, it has become increasingly difficult to easily describe and conceptualise the complex, dynamic, uneven and often barely legible contemporary landscape of media in China. One way to frame it, and therefore to give a fuller picture of the media landscape in this chapter, is suggested by Qian Gang, former managing editor at *Southern Weekend* and an academic at the University of Hong Kong. Qian described the contemporary Chinese media as characterised by three "C"s: control, change and chaos. His colleague David Bandurski suggests an

alternative variation for the last characteristic: confusion (Frenkiel 2011). Like Bandurski, I do not favour "chaos", since it suggests turmoil, or *luan* (乱), the fear of which tends to drive stability-maintenance directives from political elites, a connotation I do not believe is intended in Qian's characterization. However, I might suggest another word that speaks to the alternate, mathematical connotation of chaos that has such an important sway in contemporary ecology: complexity. Still, however you choose to render the last "C", a brief survey of environmental reporting in China today turns up all of them.

First, control: to see evidence of that paradigm, one can look to stories where blame has been shaped by powerful actors and highly controlled media outlets (cf. Tilt and Xiao 2010) or to the litany of media blackouts around environmental incidents. For example, in July 2010, the Zijin Mining Company managed to suppress media reports about a massive leak from one of its copper mines into the Ting River in Fujian Province for nine days. The leak caused the death of more than 1,500 tonnes of fish. A month after the disaster, villagers told the *Southern Metropolis Daily* that they used to catch turtles, grouper, beard fish and eels in the river. Now it was mostly dead and eating what you caught was said to be "as dangerous as taking poison" (Yang 2011). Another example of the control paradigm can be determined in June 2011, when users of the popular microblogging service Sina Weibo read this short post: "Two wells at a Bohai oil field have been leaking for two days. I hope the leaks are controlled and pollution prevented". Censors worked fast to delete the original post, but it spread even faster. It was likely written by a whistle-blower at China National Offshore Oil Corp (CNOOC), the state-owned Chinese company that forms half of a joint venture with Conoco Phillips at an oil field in the Bohai Sea, off China's northeastern coast. It turned out to have been correct. In the end, the size of the oil sheen officially reached about 2,500 barrels, polluting around 4,250 square kilometres of sea. However, the State Oceanic Administration did not confirm the leak until an entire month later. Later that same summer, nearby in the northeastern coastal city of Dalian, residents took to the streets to oppose a planned PX factory. Microblog posts containing slogans and pictures of the protests were quickly scrubbed from the internet. Censors filtered the word "stroll" (散步 pron: *sanbu*), which, as pioneered in Xiamen, was employed by activists to describe the demonstrations (Geall 2011b).

In 2010, *chinadialogue* tried to conduct an investigation in the city of Dongguan, a manufacturing hub in southern China's Pearl River Delta that is thought to have high rates of occupational- and pollution-related diseases. The researchers, seasoned Chinese investigative journalists, were continually rebuffed. Time and again, requests for interviews were refused; the environmental protection bureau, the local hospital, oncologists and environmental scientists all declined to speak to them, and even the proceedings of a public, academic conference on environmental medicine were said to be confidential. One soil expert who agreed to an interview had to consult government officials first, who told him not to make any data available to the researchers (chinadialogue 2011). So, media control still exists as a powerful dynamic. But what about the second C: change?

Here I have already begun to outline briefly one set of changes: the increasing commercialisation and diversification of the media industry in China. The huge growth of online media has been another important factor, since the internet allows far more news and information to proliferate across regions, often faster than censors can catch up. China now has 591 million Internet users, according to the China Internet Network Information Center, and more than 460 million mobile Internet users. The QQ instant messaging service had 798.2 million registered users at the end of 2012. Sina Weibo, the largest micro-blogging service, has more than 500 million registered users (CNNIC 2013), though its regular users are fewer. One study (Fu and Chau 2013) found that about 4.8% of a sample of Weibo users generated more than 80% of the original posts on the network.

Furthermore, locational technologies, harnessed in new social media services like WeChat, and the ubiquity of photographic technologies (cf. Zhang and Barr 2013, 35-61), have provided valuable resources for journalists and environmental activists. Despite an elaborate online censorship apparatus that filters politically sensitive terms, the political conversations on Weibo are lively; journalists find numerous tips and leads online; and "netizens" (网民 pron: *wangmin*) find ingenious methods to get round censorship, using humorous and elaborate code-words, images and substitutions of sensitive characters for sound-alikes. A full account of such techniques could easily fill another dissertation, but for an illustration one could cite an episode in 2012, when after the residents of Shifang, in Sichuan province,

protested against the proposed construction of a copper refinery, a photograph of a baton-wielding police officer chasing student demonstrators was wittily re-imagined and circulated online. Liu Bo – the police officer's name had been identified through crowd sourcing, also known as the "human flesh search engine" (人肉搜索 pron: *renrou sousuo*) – now ran after the famous hurdler Liu Xiang, and charged into the background of Edvard Munch's painting "The Scream". Such subversive humour had been prefigured by journalistic techniques known as "edge ball" (see below). These innovations, of course, posed new challenges for media control, so it's not surprising that an adaptive party-state has attempted to meet these challenges. At all levels, the authorities have increasingly attempted to use social media, not only as a gauge of public opinion, but also as a way to try to influence it, pointing to a new governance arrangement that MacKinnon (2012) has described as "networked authoritarianism".



Figure 8: Liu Bo runs after student protestors in Shifang, Sichuan in 2012.



Figure 9: Liu Bo appears in one of many online parodies

The rise of journalism as a professional aspiration for young people – many of whom do not view it as an official propaganda role, as it was mostly regarded during the Mao Era – is another change that has significantly affected China's media landscape. This professionalism takes different forms. Hassid (2011) identified four different "ideal-types" for professional journalists in contemporary China. The first group were the "American-style professionals": journalists who aspire to represent "objective facts" and "balanced opinions". To explain this model, one reporter cited by Hassid said that younger journalists were more "professional" than older ones, because they had more formal training and were "more influenced by America". Presenting an article as being "nothing but the facts" can sometimes be a powerful way of carrying out watchdog journalism – but there is also, Hassid noted, a tendency towards "political passivity" among these sorts of reporters. (It is a theme I return to in Chapter 5, discussing the notion of "balance").

The second he identified were the so-called "throat and tongue" of the Chinese Communist Party. These "communist professionals" might aspire to the same notions of journalism-as-propaganda that were enforced more rigidly in the Mao era – and I have introduced in Chapter 2 – but they are not simply relics of a bygone age, as the examination an official media organ like *People's Daily* quickly reveals. For example, around the time of the Copenhagen climate-change conference (see Chapter 6 for a more detailed analysis of this media coverage of this conference), China's state media went into overdrive extolling the Chinese leadership's role in climate-change

diplomacy.

The third professional type cited by Hassid is the "workaday journalist": the reporter who will do almost anything for the right price. Corruption among journalists in China is certainly widespread, from payments or bribes in the form of "car fares" and "red envelopes" – companies and local governments underwriting reporters' travel, and typically adding a cash-stuffed envelope for good measure – to cases of outright blackmail. For example, one broadcast journalist at a Beijing television station – ironically, working for a programme called *Transparency* – was exposed in 2007 for faking a story about cardboard being included as a meat substitute in steamed buns, a popular street snack. The reporter had in fact hired four migrant workers to make the buns – teaching them to mix three parts caustic soda-soaked cardboard to two parts meat – and filmed them (Geall 2013b). It is notable that China's emerging independent and investigative publications, such as the business magazine *Caijing* – founded by investigative journalist Hu Shuli, now the editor of *New Century Weekly* – are the only outlets to enforce a strict code of ethics for their journalists, including refusing the red envelopes. One journalist told me about his embarrassment at not being able to receive the bribes when on assignment for *New Century Weekly*. Other reporters, he said, had looked at him and laughed derisively, as if he were making a sanctimonious statement. Liu Jianqiang (2013, 207-208) also mentions the role of such ethical considerations in notions of professionalism, in reflecting on his reporting at the Three Gorges Dam, noting that he had initially been "lauded" by the Three Gorges Dam Corporation as "a professional and honest reporter" because he had covered his "own reporting expenses, including flight tickets, food and accommodation", when most of the journalists who reported on the dam had their expenses covered by the corporation.

Finally, and most significantly in this dissertation, is the fourth type of journalist, which Hassid calls the "advocate professional". The advocate professional's aim is to advance a social, ideological or economic viewpoint in their stories. It is this last ideal type I have mainly found represented among Chinese environmental journalists, and fits many of my informants. Some also fit another description: that of the investigative journalist, described by Svensson (2012) and Bandurski and Hala (2010), though this overlaps with category one, in Hassid's typologies. There were

also differences between the green issue entrepreneurs with whom I interacted: while Svensson identifies the investigative journalist community as being notably gendered — having only around 16% women — this was not the case among the environmental journalists I interviewed. While I did not set out to create an exhaustive or even a generalisable survey of Chinese environmental reporters, there was at least a gender balance, if not a slightly higher proportion of women among the reporters I encountered. Rather than advocating a specifically environmentalist or greenspeak-type ideology, the environmental views of the reporters I worked with differed a great deal. A far more consistent commitment I found among Chinese environmental reporters was to the ideals of transparency, openness and public participation – perhaps, a determination to explore the boundaries of China's public sphere, and the link between environment and politics. Yang (2010) introduces another, overlapping definition, the "issue entrepreneur" – which helpfully describes those journalists who try to bring topics that concern them into the public sphere.

The edge ball

The term "issue entrepreneur" emphasises the journalist's agency and suggests the extent to which environmental reporters, rather than being "mere puppet[s] in the global news order" (Hannerz 2002, 60), can be actively involved in disputes that shape the process of "encoding" (Hall 1980) the media: they can be found researching and writing detailed stories and often negotiating or challenging other social actors, including censors and their editors, to advance a particular understanding of the news. Yang defines this terminology and its significance in the environmental context:

> "Issue creation depends on the strategies and resources of issue entrepreneurs, namely, social actors who promote a social issue publicly. Environmental sociologists, for example, have identified media professionals, scientists, lawyers, and politicians as some of the most influential issue entrepreneurs in environmental politics." (Yang 2010, 103)

It may be these sorts of issue entrepreneurs who can operate best among the last C – complexity, or confusion, which as Bandurski has argued, represents a type of political opportunity, "as enterprising professional journalists can exploit the gaps in this complex environment and push coverage further than the authorities might

formally allow." (Frenkiel 2011) One vivid metaphor for those strategies used by journalists to navigate the opportunities presented by an often-perplexing media environment is the "edge ball" (擦边球 pron: *cabianqiu*). This metaphor has been attributed to Qin Benli, then editor of *World Economic Herald*, a Shanghai-based newspaper that was a key source of information and for Chinese pro-democracy protestors in 1989. In an interview about Chinese journalism, Qin said: "It's like playing Ping-Pong. If you hit the ball and miss the end of the table, you lose. If you hit the near end of the table, it's too easy. So you want to aim to just nick the end of the table. That's our policy." (Kristof 1989)

On November 16 2007, a boldface banner headline in the Guangdong-based newspaper *Southern Metropolis Daily* read: "Authoritarian Rule and Dictatorship Will Certainly Fail" (专职独裁通知必然失败. pron*: zhuanzhi ducai tongzhi biran shibai*). On first inspection, it appeared to be a very strongly phrased, even dangerous statement, which would not generally be permitted by the censors. However, on reading the newspaper more carefully, the headline in the large, bold typeface had a far smaller conclusion, which was not printed in bold. In fact, the full title read: "Authoritarian Rule and Dictatorship Will Certainly Fail: The Information Office of State Council Publishes White Paper, Introducing the Multi-Party System in China". The larger, boldface part of the headline was, in fact, a quotation from a central government white paper, which in itself was uncontroversial, and simply set out China's official policy on minority parties: the People's Republic of China technically has a multi-party government, albeit in an ineffectual sense that only allows eight parties to exist, under the political control of the Communist Party. (These include the Revolutionary Committee of the Kuomintang, the Jiusan Society and the China Democratic League – not to be confused with banned parties such as the Democracy Party of China.) As Xiao (2007) pointed out, the headline was a classic edge ball. Bourdieu describes the practical sense that arises from encounter with a field – that is, the "proleptic adjustment to the demands of a field" – in terms of having a "feel for the game" (Bourdieu 1990, 66). Discussing the practices of Chinese intellectuals in the 1980s, Link also uses the metaphor of the game to describe the strategic use of official discourse:

> "It would be inaccurate to consider his official expression insincere or merely

> superficial; instead, he was following the rules of a game. His official use of words, at its cleverest, resembled a go player's considered placing of stones: perhaps initially of opaque intent, yet well considered, sometimes sophisticated, and always with a final goal in mind." (Link 1992, 8)

Drawing on these examples, I suggest that the edge ball and other games of strategy should be considered as sophisticated practices that help journalists navigate their encounters with a changing field where opportunities flourish in conditions of uncertainty and confusion. This is a valuable lesson not only for considering journalistic practice in China but broader environmental engagement. Ho (2001, 897) put it simply in writing that while control and repression in China continue to be "a reality", one should not "overlook the many strategies that citizens can employ to escape from the government's control… the complex patterns of interaction between state and society that shape environmental movements." Castells (2004, 186) asserted that media and environmentalists relate as if tap-dancing: "the two groups caught in an ongoing dance that changes tempo quickly and involves improvisation from both partners" (Hutchins and Lester 2006, 433). There is a similarity and an analogy to be drawn here, too. But in Hutchins and Lester's examples, drawing on Castells, the "game" is the accepted space of media flows, where "media managers, public relations consultants, spin doctors, stage-managed events and image manipulation are an accepted reality" (2006, 446). In their examples of interaction between Australian environmentalists and media, there is often an appeal to reporters "at one-off river protests or tree sit-ins in remote wilderness, in which the politics of the situation are both overt and emphasized by the presence of police." (2006, 447)

This is not a reality for most Chinese environmental reporters: to play the edge ball is precisely to remain *just* within the space of flows, or perhaps in its margins, rather than engaging with the wilderness of protests. Typically, Chinese edge ball strategies are more similar to what Strathern (2006, 184-185) has described as "bullet-proofing" in the context of university documentation. Strathern argued that the documentary practices she identified: essentially, the production of "(unanalyzable) nonsense" in Cambridge University mission statements, were "protective aversion tactics". These were analogous to the tactics of civil war fighters in Mozambique, as discussed by Comaroff and Comaroff (2002), whose marks on their chests were said to be

“vaccinations” against bullets. In common with the mission-statement writer and the Mozambican fighter, the Chinese journalist does not shoot “bullets”, but deflects the soldiers' aim: the decontextualised quotation is a shield. Strathern cited Gell's description of a Papua New Guinea shield that produces terror in the enemy as a result of having produced terror in the bearer – a terror of the bearer himself and of the bearer’s own power. Gell (1998, 31) writes that this is the “very secret of mimesis” identified by Walter Benjamin: “to perceive (to internalise) is to imitate and thus we become (and produce) what we perceive”. Thus the game of Ping-Pong is germane to the predicament of the Chinese journalist not only because of the importance of the edge ball shot, but also because of the centrality of deflection as a part of the game. The practice of quotation is a mimetic strategy, where much of the challenger's strength is taken from his or her opponent: the more the headline internalises the Chinese government's own power, the stronger it becomes. If the edge ball headline holds a terrifying power, it is because it reflects the government's own power back at itself.

Considering the fertile ground of confusion and the edge ball strategy, it is therefore notable how many of the founders of China’s earliest and most significant environmental NGOs were indeed journalists operating in the partially liberalised media sphere: Liu Detian, founder of the first legally registered green NGO, the Society for Protecting Black-Beaked Gulls, was a journalist at *Panjin Daily News* (Zhan 2011, 117). The Fourth UN Conference on Women in Beijing in 1995 meant that a number of journalists were able to see first-hand the advocacy strategies of international NGOs, inspiring the journalist and documentary-maker Liao Xiaoyi to found the environmental NGO Global Village of Beijing that same year (Boyd 2013, 45-46). In 1995, Wang Yongchen, a radio broadcaster and prominent critic of dam construction in south-western China, also founded Green Earth Volunteers, still one of China’s biggest environmental NGOs. Ma Jun, founder in 2006 of the data-focused Beijing-based NGO the Institute of Public and Environmental Affairs, started his career as an investigative reporter at the *South China Morning Post*, writing in 1999 the influential book *China’s Water Crisis*, which drew on his first-hand reporting experience of the severe impacts of over-extraction of groundwater, water pollution, flooding and drought across China.

The limits of openness: Transparency regulations

This background might help to explain journalists' attachment to discourses of openness in China. A good example of the edge ball space of confusion, in which journalists have played the game — and tested the limits of openness — is with regard to China's transparency regulations. The core, institutionalised international consensus around environmental information, stems from Principle 10 of the Declaration issued at the end of the "Earth Summit", in Rio de Janeiro in 1992, of which China was a signatory:

> "Environmental issues are best handled with participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous material and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided." (Rio Declaration 1992)

Thus, the Rio Declaration linked public participation to access to information and access to justice or redress. Subsequent international agreements on access to information have emerged as suggested starting points for legislation and implementation in UN member-states. For example, the Bali Guidelines, a set of recommendations published by UNEP in 2010, calls for public authorities in all countries to provide "affordable, effective and timely access to environmental information" to citizens and organisations on request, including "information about environmental quality, environmental impacts on health and factors that influence them… information about legislation and policy, and advice about how to obtain information." (UNEP 2010) Governments are expected to establish processes for the regular collection and publication of "information about proposed and existing activities that may significantly affect the environment," and to build the capability of public authorities and the public to make use of information access.

A core principle in this framework is that granting access to environmental

information is not only admirable in principle, but also that it is a cost-effective method for policymakers concerned about pollution control: it can harness social participation and public pressure to improve the environment, the theory goes, often more effectively than top-down measures, such as tightening emissions standards. Significantly, this is a theory that was initially embraced at an elite level in China, particularly since many government officials believed that a benefit to greater transparency would be keeping better tabs on local inefficiency and corruption, as an element of the encompassment and vertical surveillance introduced in Chapter 2. The Chinese Academy of Social Sciences established a specific research institute on open government information laws in 1999. In 2006, this institute submitted China's first draft regulations on open government information to the State Council. The Open Government Information Regulations of the Peoples Republic of China (OGIR) came into effect in May 2008. The Measures on Open Environmental Information (MOEI), the first specific decree based on the OGIR, entered into force at the same time. One official from the State Council told reporters that the regulations would "help curb corruption at its source, largely reducing its occurrence" (Xinhua 2007a)

The measures (State Environmental Protection Administration of China 2008) require not only environmental authorities but also enterprises to disclose environmental information, both proactively and in response to information requests from citizens. In the measures, "government environmental information" refers to information made or obtained by environment authorities in the course of their environmental protection work; "enterprise environmental information" refers to information about environmental impacts arising from an industry's operations. The measures stipulate that environmental protection departments should disclose government environmental information on their own initiative: "by means of government websites, government gazettes, press conferences, as well as through newspapers and other publications, radio, television and other methods that make it convenient for the public to be informed." Enterprises are also encouraged to disclose environmental information voluntarily. The government also mandates the disclosure of certain types of information from industry, including emergency plans for sudden environmental pollution accidents, and discharge information if polluters have exceeded national or regional pollution limits. The measures specify that government environment information should be made available to the public within 20 working days; responses

to information requests from citizens should be answered within 15 working days; and major polluters must disclose and report emissions data within 30 days.

In the hands of Chinese environmentalists, this could clearly be a powerful tool to hold polluters to account (one might think of the "information politics" or "accountability politics" functions of civil-society organisations, mentioned in Chapter 2). Article 1 of the OGIR (State Council 2008) clearly states that the purpose of the regulations is to "ensure that citizens, legal persons and other organisations obtain government information in accordance with the law, enhance transparency of the work of government, promote administration in accordance with the law, and bring into full play the role of government information in serving the people's production and livelihood and their economic and social activities". As with similar legislation in other countries, there is a clause that stipulates the exemptions from disclosure – Article 8: "The government information disclosed by administrative organs may not endanger state security, public security, economic security and social stability." There is also Article 17, which states that if other laws or regulations "have different provisions on the scope of authorisation to disclose government information, those provisions shall be followed." This means that laws, such as the state secrets law – which is frequently used in China, not only to keep controversial information from public view, but also as a means of silencing individuals critical of the government – can trump the regulations.

It is on the proactive measures covered by the MOEI that there has been the most effective implementation (Article 19 2010). The website of Beijing's municipal environmental protection bureau, for example, clearly discloses these 17 categories of information, including environmental laws, regulations, standards and administrative permits. Significantly, an online "storm" of citizen complaints on microblogs led to a increase in disclosures in early 2012, when Beijing and some 73 other cities started to release real-time information about airborne concentrations of fine particulate matter, known as PM2.5, which penetrates deep into the lungs (Geall 2013c). An unusually polluted few weeks in the capital in late 2011 saw thick smog blanketing the city. The focus of anger among concerned, networked citizens became not only the smog, but also obfuscation in the official reporting of it. Every year since 1998, when public reporting of air quality began, the Beijing government had increased the total number

of annual of "blue sky days": a measure based on the city's air pollution index, and one which certainly did not match people's visual observations of deteriorating air quality, or those of visual diarists, such as the citizen photographers Lu Weiwei and Fan Tao (Chen 2011), or Michael Zhao (2012). Nor did it take into account PM2.5 concentrations, which were being collected and shared hourly by the US embassy on their Twitter account @BeijingAir (Boyd 2013, 41-42). One revealing comparison between the US Embassy and official statistics was produced by Steven Q Andrews, an independent scholar and consultant (Andrews 2011), who looked at PM2.5 and other data, and concluded that the city authorities had artificially deflated air pollution statistics by adding new stations farther out, in cleaner suburbs. An online poll started by the well-known property developer Pan Shiyi saw tens of thousands call for the government to release more accurate measurements: calls which were heard, when in January 2012, Beijing trialled the release of PM2.5 data, scaling up the effort later in the year. Significantly, the government not only acknowledged, but championed the role of public pressure in the campaign, with state news agency Xinhua praising the "stirring campaign" and the "satisfying response" from policymakers (Xinhua 2012).

However, compliance evaluations, such as that by the free-expression campaigners Article 19 (2010), found that the Beijing bureau, despite its comprehensive website and proactive disclosures, was poor at responding to requests for information from the public. The report's author, Amy Sim, told me: "A lot of officials interpret [the regulations]: as long as it's not within the 17 types of proactive disclosure, they will not disclose." The more sensitive environmental information of particular relevance to journalists and campaigners – for example, on the disposal and discharge of hazardous waste – is still very difficult to obtain. Alex Wang, a Chinese environmental law expert at the University of California, Berkeley, told me in an interview: "China has made great strides in environmental disclosure in recent years, but right now the types of information that are most critical to uncovering environmental problems – emissions data, records of violations, environmental impact assessment reports – are still difficult, if not impossible, for the public to obtain." (Geall 2011b) So, with these regulations in place, on what grounds is sensitive information still being withheld? Speaking at a seminar in 2011, Wang Canfa, director of Beijing's Centre for Legal Assistance to Pollution Victims, claimed that: "Although the regulations list 17 types of information that should be disclosed and

only one short clause on exemptions, that one short clause has become a catch-all". The reference here is to Article 8, the exemption clause in the national regulations regarding national security and social stability, which also applies to the environmental decree.

Open information legislation across the world contains similar exemptions. The extent to which governments rely upon these can give a good indication of their commitment to their own openness policies. However, the evidence from my own interviews and from evaluations such as Sim's (Article 19 2010) and others' (cf. Zhang et al 2010) suggests that in China the situation is more complicated: since, although refusals from Chinese government agencies to release information are frequent, such justifications based on the Article 8 exemptions were not cited as much as other explanations that, in fact, had no legal basis whatsoever. The grounds for rejection, Sim found, were generally "not very clear": many officials replied that the information was simply "inconvenient to disclose" or that it was "liable to be sensationalised by the media". As with much regulation in China, the existence of the legislation – which, on the books, looks to be in line with international norms – doesn't mean that it is being effectively, consistently or accurately enforced (see Chapter 2). In 2011, a campaigner opposed to waste incineration projects in the Beijing suburbs told me that his requests had been refused on the grounds that the relevant documents had been lost by an intern in the EPB office. This suggests the problems with the OGI regulations expose a lack of capacity, training and perhaps also with the specificity of enforcement provisions in the regulations, as well as a pervasive bureaucratic culture of secrecy at a local level, rather than what might be imagined as a conventionally authoritarian response to citizens' requests. The space is more one of confusion than control.

Many Chinese journalists have taken an active interest in the poor implementation of transparency rules. In 2009, it became headline news in the country when two journalists from Xinhua were stopped from photographing documents listing pollution violators, information that the authorities are supposed to disclose, at a provincial government meeting in Heilongjiang province, northeast China. (It was this province that was most affected in 2005, when a series of explosions at a petrochemical plant created an 80-kilometre-long toxic slick in the Songhua River. The State Environmental Protection Administration, the predecessor of the MEP, only admitted

the serious pollution of the river 10 days after the explosion and one day after water was cut off in the provincial capital of Harbin.) When an official told them the information was "confidential" and the media had already had "enough" information about pollution, the reporters walked out of the meeting in protest – a gesture that earned them widespread sympathy from Chinese media commentators. In early 2009, Southern Weekend published on its website an environmental impact assessment (EIA), obtained using open government information laws, which approved the construction of a controversial petrochemical plant in Fujian Province. But such cases are still rare. Despite their interest in the implementation of the regulations, most Chinese journalists have not made much use of the legislation itself. Surprisingly few Chinese journalists that I interviewed in my research were aware that open information laws existed, and none had used them as reporting tools. The culture of investigative reporting that exists in China has grown in a context where information is shared unofficially, and there is little trust in the efficacy of such government-sanctioned measures.

Most of the pressure for greater disclosure has come from NGOs like Friends of Nature (FON), which has campaigned, for example, for the government to disclose information about boundary changes at a protected area for rare and endangered fish species ("The Upper Yangtze Rare and Endemic Fish Nature Reserve") on the Yangtze River, decisions which helped to make way for the Xiaonanhai Dam project — under construction after being approved by the now ousted municipal leader Bo Xilai — near the city of Chongqing, in south-west China. The boundary change "basically means a death sentence for these endangered species," Chang Cheng, the young, legally trained, Beijing-based director of FON, told me. The species include the Chinese paddlefish and the Yangtze sturgeon, a so-called "living fossil" (also referred to, with reference to that more iconic charismatic megafauna, as the "underwater panda") that has survived since the era of the dinosaurs. Using open government information laws, FON requested a copy of the government's on-site investigation report and the declaration of the boundary change, which includes an impact assessment. But the Ministry of Agriculture refused these on the grounds that "procedural" data was not covered by transparency legislation. Chang told me: "This is like a "Catch-22" situation for the public who wish to supervise and participate in the government's decision-making." His meaning was: if the government isn't willing

to disclose how its decisions are made, and if its procedures aren't being correctly followed, it's difficult to see how freedom of information can be used to hold the government to account at any time other than after the event. (Or to put it another way: it won't be much help to find out that procedures were carried out incorrectly after the Yangtze sturgeon is declared extinct.)

Thus, the landscape of the open government information regulations helps to reflect and expose the context in which my research took place: the gap between regulations and their implementation; the entrepreneurial, but careful and restricted involvement of civil-society actors and journalists pushing into the "edge ball" space of confusion opened by political opportunity; and the delicate balancing act that defines governance in China today: between pressure for greater openness and public oversight to aid central state capacity, verticality and encompassment, while maintaining stability (or "harmony", as it is known in propaganda) through high rates of economic growth and safeguarding the unchallenged political authority of the CCP.

The world of wounds: Environmental writing

The interviews I conducted with reporters typically started with a discussion of what had motivated their initial engagements with climate change and the environment. Aside from their exposure to internationally supported climate-change training sessions — these were often cited as introductions to the topic, and I will return to this topic in more detail later – many journalists had personal narratives that helped to define their different approaches to the issue. Significantly, these narratives tended to underscore the agency and issue-entrepreneurial nature of the work. One reporter with a business-journalism background — a number of journalists I interviewed had started in business and financial reporting — described a visit to Japan that impressed her: the country was clean, people recycled their trash and the landscape around Mount Fuji was still forested, she said.

Another journalist I interviewed in 2010, formerly at *Southern Weekend*, told me after he had attended an internationally funded environmental journalism training session, he realised something else:

> "I also had a personal experience, which is why this meant so much to me.

> When I was young, before the age of 15, my family would go down to the Mi River – which was an especially clear, wide and shallow river. When I was small I would play there with my older brother and swim, it was a great place. Then after I turned 15, China entered a period of economic development; there were many big factories, and the water became polluted and a lot of the water slowly disappeared. This once beautiful place now is drought-stricken and polluted. I had never realised the need to protect this place, and what development and profit-seeking could represent."

Interestingly, such accounts are not unique to China. Tsing recounts an Indonesian environmental journalist explaining his professional outlook, also shaped by the shock realisation that his environment, the Indonesian rainforest, was vulnerable to disaster: "I realized that the forest line was receding. I may have seen it for a long time, but at some stage it shocks you." (Tsing 2005, 123) Further still from China, is the post-war US writer Aldo Leopold, who explained this particular type of shock — one that starts with an environmental education and then connects back to one's lived experience and sense of mourning — in *Round River*:

> "One of the penalties of an ecological education is that one lives alone in a world of wounds. Much of the damage inflicted on land is quite invisible to laymen. An ecologist must either harden his shell and make believe that the consequences of science are none of his business, or he must be the doctor who sees the marks of death in a community that believes itself well and does not want to be told otherwise." (Leopold 1993 [1953], 165)

This points to the overlooked extent to which the professional ideal of the environmental journalist should not only be considered in terms of nationally or culturally bounded typologies (cf Hassid 2011) but also thought of in relation to the international genre of environmental writing, one which can be found today in almost any country's media outlets. In some cases, the environmental agenda has become sufficiently commingled – the environment one element among interlocking political, scientific and cultural narratives – that it is often difficult to put one's finger on "environmental journalism", at least when it is not placed in a specifically environmental section of, for example, a newspaper or website. But one could perhaps consider its origins in the muck-raking newspaper reporting of the early twentieth-

century United States, such as the work of the novelist and journalist Upton Sinclair, author of *The Jungle* (Sinclair 2006 [1906]), which exposed the horrors of Chicago's slaughterhouses – sausages containing rat dung and mould, workers falling into vats of lard and never being fully retrieved.

Other environmental reporters trace their lineage back to Henry David Thoreau in the 19th-century United States, by way of John Muir at the turn of the 20th century and Rachel Carson in the 1960s. Or perhaps to June 22, 1969, when an oil slick and debris in the Cuyahoga River caught fire in Cleveland, Ohio, drawing national attention to environmental problems in the United States. As *Time* magazine wrote at the time:

> "Some River! Chocolate-brown, oily, bubbling with subsurface gases, it oozes rather than flows. 'Anyone who falls into the Cuyahoga does not drown,' Cleveland's citizens joke grimly. 'He decays'… The Federal Water Pollution Control Administration dryly notes: 'The lower Cuyahoga has no visible signs of life, not even low forms such as leeches and sludge worms that usually thrive on wastes.' It is also – literally – a fire hazard." (Time 1969)

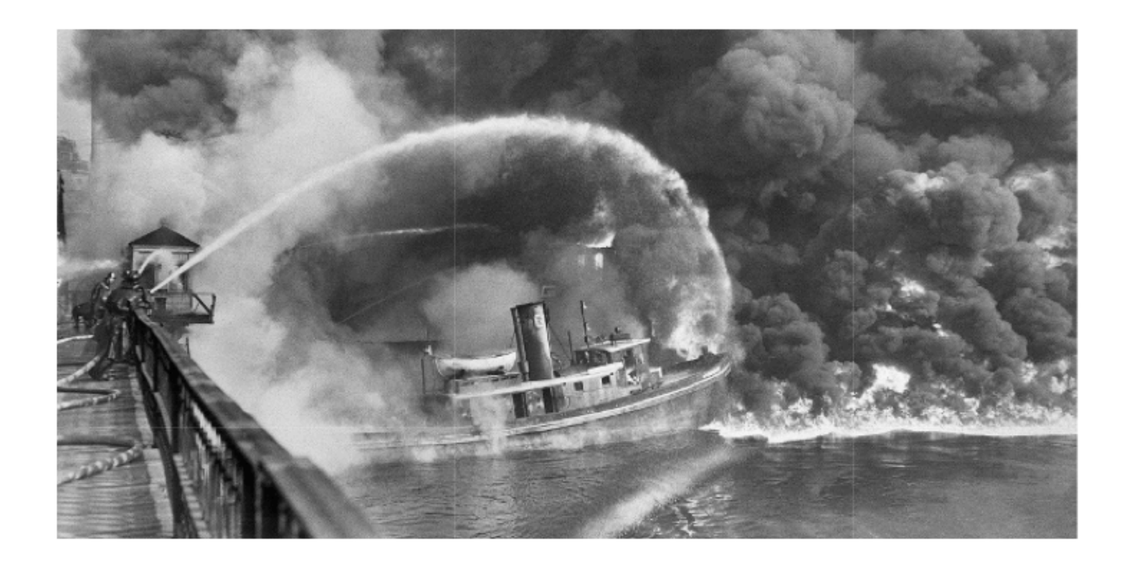


Figure 10. The Cuyahoga River fire, 1969, as it appeared in Time magazine.

This event – the accompanying photograph having an all-important shock value – helped to spur the American environmental movement: a widely recognised victory being the passage of the Clean Water Act in 1972. But it is comparatively recently that, in the climate-change arena at least, reporters from the global south have

“written back” to the Euro-American centre from which the discourse of sustainable development principally originated. Fioravanti, for example, discovered that in Brazil (2007), climate-change coverage increased four-fold in the *Folha de São Paulo* newspaper from mid-2006 to mid-2007. This also fits with the observations of a number of anthropologists looking at how transnational flows of information have transformed social and economic life in the developing world over the past few decades. Appadurai, for example, has argued that global information flows have had a transformative power, allowing people to “no longer see their lives as mere outcomes of the givenness of things, but often as the ironic compromise between what they could imagine and what social life will permit.” (Appadurai 1996, 54)

This points to the necessity of some attention to international comparison in forming an accurate typology of the Chinese environmental journalist: not, of course, in order to view the emergence of environmental journalism in China as a point on an evolutionary ladder – as Choy (2011, 6) points out, the question is not whether “environmental politics have caught on ‘yet’” – but to ask what comparative thinking might uncover about the stakes and politics of the field. The notion of the global, and the role and status of the international journalist – including, but obviously not synonymous with the western journalist – is an important element of the topography of environmental journalism and it is worth considering the constitution of environmental journalism in countries like the United States and the United Kingdom in order to understand their translation and reflection in the spaces and practices familiar to China's environmental journalists.

Likewise, it is also worth considering the comparison with environmental journalism elsewhere in the developing world. Journalism in India, for example, is more diverse, better established, and more vocal than it is in China. Yet like China, India’s media is a growing market, with an increasing online population. Sustainability-focused publications, such as the biweekly magazine *Down to Earth*, exist in India, but since other forms of investigative journalism are also permitted there — and environmentally focused reporters compete with more sensational genres — environmental journalism occupies a less prominent public role in India than it does in China (Geall 2012), a fact which helps us to understand the extent to which sustainability-focused journalism in China provides a prism through which more

sensitive political themes can be addressed.

Still, a number of environmental stories that emerged in India captured the imagination of the environmentally minded publics around the world and helped to shape the sustainability agenda as it has been institutionalised and circulated internationally. The first such one arose in the mid-1970s, when the women of the so-called Chipko movement hugged trees in an act of Gandhian, nonviolent protest, to prevent them from being felled. As in other parts of Asia (notably Indonesia, as mentioned above) deforestation has been a contentious issue for decades and has been covered frequently by the Indian media. Since the government has tended to blame the slash-and-burn agricultural techniques of tribal peoples — whereby sections of forests are burned to create open fields — for the problem of deforestation, environmental reporters have played a central role in exposing the role of industry and the timber lobby in deforestation and defending the traditional livelihoods of indigenous peoples (Guha 2000, 115-119).

But it is the Bhopal tragedy of 1984, however, that is cited by many environmental reporters as their introduction to the field of environmental reporting. During this incident, highly toxic methyl isocyanate gas and other chemicals leaked from a pesticide plant owned by Union Carbide, resulting in the exposure of hundreds of thousands of people to the harmful substances. The death toll released by the state government of Madhya Pradesh, in central India, was 3,787; around 40,000 people were left disabled or suffering from serious illnesses. Other sources report as many as 8,000 deaths, initially, with 20,000 to 30,000 subsequent deaths. The Mumbai-based journalist Kalpana Sharma explained that the Bhopal disaster "revealed the indifference of policy makers to the interests of poor people who were allowed to live in the vicinity of such a hazardous industry without knowledge of what to do in an emergency… Bhopal is an environmental story but also a political one. It has already illustrated the power of big industry over government. It has shown how difficult it is for victims who are also poor to get their voices heard." (Sharma 2012, 46)

In India, similarly to China, some of the country's best-known environmental journalists have also founded NGOs. Anil Agarwal, who started as a reporter at the Delhi-based *Hindustan Times* in 1973 and reported on the Chipko movement, founded the Centre for Science and Environment in 1980, which pioneered the study

of sustainability in the Indian context. Agarwal continued to write on environmental topics until his death in 2002. Darryl D'Monte was an editor at the *Times of India* and the *Indian Express* before he became the chairperson of the Forum of Environmental Journalists of India (FEJI) and the founder-president of the International Federation of Environmental Journalists (IFEJ) (Geall 2012). In south Asia, however, environmental journalism, as a "category" of journalism, has been the subject of more criticism than is often seen in the Chinese context. Kunda Dixit, a prominent Nepali journalist and editor, has written, "One of the greatest disservices we have done to the cause of environmental protection is to invent a separate category of reporting called 'environmental journalism.' . . . These issues are important in their own right, not because some donor finds them important and is willing to cough up money to get them covered. There has to be a distance between the NGO and media worlds, getting too close hurts the credibility of both" (Dixit 2010, 16).

This is interesting not only because it exposes the extent to which the field of environmental journalism is contested around the world by its practitioners, much as it is in China, and is an imperfectly defined set of practices with multiple historical trajectories, but also the extent to which it has been shaped, like institutionalised environmentalism and sustainable development, by development agencies and foundations that support environmental journalism – a point that resonates in the next two chapters. As Dixit puts it in his trenchant critique:

> "Just as 'development journalism' at one point became synonymous with sponsored reporting because it was mostly practiced by lazy hacks on sponsored junkets, so it has with 'environmental journalism'. It ghettoised reporting on a subject that should have been linked to politics, economics and development… There has to be a distance between the NGO and media worlds, getting too close hurts the credibility of both." (Dixit 2010, 16)

Conclusion: Beyond the green public sphere

The rise of green NGOs, championed by particular actors and factions in central government, most prominently Pan Yue (as discussed in Chapter 2) had much to do with the rise of a more independent, watchdog media in which such engaged practitioners could act. This was reflected in agenda-setting: NGOs increasingly set

the media agenda around environmental issues. Influential NGOs, both domestic and international, such as Green Earth Volunteers and Greenpeace, organised regular briefings and "salons" for journalists, which became very influential. For journalists, this was acknowledged as having provided a useful resource — but increasingly came in for criticism, too (see Chapter 5).

As mentioned in Chapter 2, it was the partially successful campaign against the proposed cascade of dams on the Nu River in 2004 that drove an analysis of China as having entered a new era of governance, increasingly shaped by its "green public sphere". Yet significantly, today the Nu River dams are now back on the political agenda (Jacobs 2013). Reports suggest some preliminary construction work has restarted, bolstered by China's 12th Five Year Plan (International Rivers 2011), the central government economic plan that gave new large dams a green light. Hydropower development plans had previously been stalled by environmental campaigns, yet their renewal seems nominally due to climate-change concerns, since hydropower is a less greenhouse-gas emitting form of electricity generation than fossil-fuel alternatives like coal. However, as many Chinese journalists would argue, this is also testament to the powerful influence of Party-linked interests in the hydropower industry, as they have been institutionalised in the period of market reform and fragmented authoritarianism.

Previous accounts seem to have been optimistic to a misjudged extent, yet despite the lack of a lasting NGO victory on the Nu River, Calhoun and Yang (2007) *did* accurately describe the emergence of a more pluralistic and diverse, media-facilitated public conversation about not only the implementation of China's environmental laws at a local level, but also the central government's process for environmental decision-making. Since such environmental stories came to be seen as less politically sensitive than, for example, journalism directly concerned with human rights and governance issues, articles about sustainability-related topics increasingly came to be used as vehicles for addressing social issues, from institutional corruption to the lack of public participation in policy-making.

Liu Jianqiang, one of China's best-known environmental journalists, said about this phenomenon in a 2010 interview: "The environment in China is not politics; politics is very sensitive. Journalists do find it easier to report about the environment." (Geall

2012, 243) The implication here is that sensitive reporting about politics attracts government pre- and post-publication censorship, which as we have established, still pervades China's media system. Underlining the unmistakably political critique at work in this approach to environmental reporting – which implies that environmental decision-making has indeed been influenced by power- or profit-seeking vested interests, and that reporting on this might pose difficult questions about the importance of these interests – Liu continued: "My question has always been who is really harming China's environment? It's not you, me or the common people. It's the huge interest groups out there. From local governments to companies and corporations, there are huge stakes in maximizing profit."

As research from Chinese communications academics has shown (see below), agenda setting has shifted away from NGO influence — and in fact, by looking into Liu's work we can understand the extent to which entrepreneurial journalists looked beyond NGOs and managed to work with citizen concerns on environmental issues beyond institutionalised civil society at an earlier stage, which may have been overlooked in the emphasis on the Nu River campaign. During the course of my fieldwork, I discovered the history of the campaign against the Tiger Leaping Gorge dam, which has not previously been discussed in the academic literature on Chinese environmental protests. I commissioned and edited the first inside account of the campaign, on which the following paragraphs are based.

In July 2004, Xinhua reported that the NDRC had reviewed and passed a "Planning Report on the Damming of the Middle Reaches of the Jinsha River", referring to a tributary of the Yangtze River, one of the "three parallel rivers" in Yunnan province, in south-west China. This document had recommended that work should start soon on a dam at Tiger Leaping Gorge, a spectacular and famously deep gorge, popular with trekkers from around the world, as part of an eight-dam cascade. The plan, it said, would displace 100,000 people and submerge around 13,333 hectares of good agricultural land. The main public opponent of the dams at Tiger Leaping Gorge was a local named Xiao Liangzhong, an anthropologist and editor at a Beijing-based publishing house, who reached out to Liu Jianqiang.

Locals suspected that construction on the dam, named the Jinanqiao, had started without approval from the central government, and was thus illegal. A colleague of

Liu's visited the dam and was detained by security guards, but managed to confirm that preliminary construction had begun. In Beijing, Liu found central government sources at the NDRC and SEPA, who were also surprised to learn that it had started. These confirmations, combined with a "big dossier of materials on the Three Parallel Rivers Region" provided by the local activist Xiao, meant Liu was able to put together and publish a front-page article in *Southern Weekend* on 29 September, 2004, with the title "Emergency at Tiger Leaping Gorge". Liu described how Li Xiaoxi, an associate professor at the Air Force Command Institute, telephoned an official in the office of the then Premier, Wen Jiabao, to check if he had read the article. "We've seen this article. It's a good story with solid facts," came the reply (Liu 2013, 212-5). Thus, the journalist, in coordination with local activists — but without the involvement of NGOs, domestic or international — had acted as political entrepreneur, navigating his way through the relative opening provided by the edge ball space of legal and spatial — central versus local — complexity.

Several days after the article had been published, Liu said he flew to Yunnan province to interview the villagers, and there had met a local farmer named Ge Quanxiao, a *de facto* village leader whose status derived from his role in resolving an earlier pollution incident: after a refinery had dumped poisonous waste, leading to a riot, Ge had demanded a stop in plant operations, scientific inspection and health checks for villagers, as well as a new, clean water source for the area. He had been arrested, but had eventually been released and feted as a local chief. Ge had given out copied versions of the *Southern Weekend* article to everyone he met, as well distributing Video CDs (an early digital format for distributing films, also known as VCDs) of an environmental documentary. The film, by Shi Lihong, was critical of dam projects and showed the impoverishment of villagers displaced by the Manwan Dam, on the Mekong River, suggesting that a similar fate would meet those villagers displaced by the proposed Nu River dams. Ge claimed that an article by Pan Yue, published in a provincial newspaper, had inspired him. Reading that dams should not be built without strong scientific backing and that they should be built sustainably, Ge had made 80 copies of Pan's essay and handed it out to villagers to study: analogous to Li and O'Brien's (2006) "rightful resistance", where grassroots contention is framed in terms of the central government's own laws and pronouncements.

According to Liu, it was local leaders like Ge that ensured the villagers achieved a second victory over the hydropower company: one that was won in 2006, without media or NGOs having ever learned of it — until Liu heard the tale in 2010. Villagers had kidnapped seven employees of the Hydropower Exploration and Planning Institute, holding them in a field overnight after spotting them carrying out a preliminary investigation for the dam. When local police and officials tried to rescue them, they were chased out by the villagers, who were joined by thousands of sympathetic locals. Locally produced books were handed out to the crowds, containing information about government policies, legal rights and a reproduction of the *Southern Weekend* article. Ge Quanxiao left town, feeling he would be blamed for the rebellion, but kept in close contact with the villagers by phone. The protest moved to the local government building, but bloodshed was averted by a negotiated truce between another local, informal leader and a government official, with a notice being published, stating that if the majority of local people were opposed to the dam, then it would not be built. For Liu, the "campaign to save Tiger Leaping Gorge should be the Chinese environmental movement's most cherished case" because "China's newly emerging social forces – commercial media, NGOs and the Internet – joined together with traditional indigenous people opposed to outside interest groups, showing what a vibrant thing a complete environmental campaign is." (Liu 2013, 234)

In the years following the Xiamen PX protests, this type of reporting became more typical: the environmental agenda for Chinese media would increasingly be set not by government nor by environmental NGOs, but by a new constellation of social actors – local activists and bloggers, newly empowered individuals, reflecting an emerging public opinion that favoured environmental concerns, with little basis in the NGOs. More independent urban media outlets, in particular, increasingly reflected these agendas. For example, Zeng Fanxu (CCICED 2013) has shown that during a heated debate about waste incineration in Panyu, a district of Guangzhou in southern China, the provincial media tended to express support for protests against waste incineration, despite the lack of government or NGO support for the protests. He found that the proportion of articles supporting the protests gradually pulled ahead of neutral or opposing voices in the newspaper *Southern Weekend*, and crucially, that the coverage particularly focused on citizens' rights to participate in environmental decision-making.

Thus, this chapter has explored how in China's Reform Era, environmental issues provided a space that engaged politics, taking a range of media forms, including online media, and interacting with a changing and complex sphere of actors and institutions, including media companies, government agencies, NGOs and informal citizens groups. In this complex, increasingly commercialised, changing and sometimes confusing space, government control still exists, not only in the form of censorship and limits on access to information, but also in the form of guided reporting and environmental propaganda. However, niches – associated with the metaphor of the "edge ball" – have also been identified, where enterprising journalists, many of whom operate in newly emerging communities, with changing sets of professional values and ethics around journalism, including environmental journalism, can push the boundaries of political and public-interest journalism. In this effort they are often helped by new technologies such as microblogging, as well as by government transparency regulations and other efforts to deal more effectively with poor implementation of environmental and other public policy. The following chapter will introduce how such a complex environment has engaged with complex interactions of social and ecological systems in the context of climate change, by looking in depth at the challenge of reporting perceived climate-change impacts.

Chapter 4: Interpretations

In 1937, Mao Zedong observed from his remote base in Yan'an, in mountainous Shaanxi, that China, long dominated by feudalism, had "undergone great changes in the last hundred years and is now changing in the direction of a new China, liberated and free, and yet no change has occurred in her geography and climate." Mao explained that changes in climate were "insignificant when compared with changes in society", since they occurred on much longer timescales. Dialectical materialism had explained that "changes in nature are due chiefly to the development of the internal contradictions in nature," whereas changes in society were "due chiefly to the development of the internal contradictions in society" (Mao 2007 [1937], 70). Mao echoed assumptions common to theorists at the time, as evidenced in Stalin's (1938) almost contemporaneous assertion in *Dialectical and Historical Materialism* that changes in "geographical environment of any importance require millions of years, whereas a few hundred or a couple of thousand years are enough for even very important changes in the system of human society."

Climate change has since destabilised such modes of thinking about history, nature and society. As Chakrabarty (2009, 201) wrote, "Anthropogenic explanations of climate change spell the collapse of the age-old humanist distinction between natural history and human history." Human-caused climate change suggests that in recent times, "humans have become geological agents" (Oreskes 2007, 93). The climate's complex, innate instability has been compounded by humans "changing so substantially the composition of the world's atmosphere," wrote Hulme (2009a, 269), that we have bought into being a "changed system… a hybrid system yielding hybrid weather." Urry (2011, 8) has suggested that in the light of climate change, "the social and the physical/material worlds are utterly intertwined and the dichotomy between the two is an ideological construct to be overcome". Others have described the need to consider a "post-natural" climate (Hayles 1999) or a "different paradigm of naturalness" (Yearley 2006).

China's climate has warmed since 1960, with an increased frequency of heatwaves (Piao et al 2010). Even with an optimistic peak in global emissions of planet-heating gases by 2020, concentrations of carbon dioxide in the atmosphere will reach 650 parts per million (the pre-industrial level being 280 ppm and the current level around

400 ppm), which, according to most climate scientists, translates into an warming of 4 degrees Celsius above the pre-industrial global average (Hamilton 2012, Anderson and Bows 2008). Such a rise in temperature will have highly uncertain effects in China, particularly on water scarcity and food security. China is home to around 20% of the world's population, yet about 5% to 7% of global freshwater resources and less than 10% of the world's arable land. A number of possible scenarios see slight net benefits for China's crop yields in a warming climate (Ye et al 2013), yet there is also the potential for severe water shortages, the further deterioration of aquatic systems and more flooding disasters (Zhang et al 2009). Meanwhile China's megadeltas are particularly vulnerable to climate change and sea-level rise, with warming potentially increasing the frequency and level of inundation in delta megacities, such as in the Pearl River Delta, due to storm surges and floods from river drainage (IPCC 2007), potentially affecting residents and damaging critical infrastructure in heavily industrialised low-elevation coastal areas (McGranahan, Balk and Anderson 2007).

How should a climate-change reporter choose to frame such abstract, "post-natural" boundary-crossing risks and uncertainties? Where should blame be assigned? To what extent are these local or global questions? How can visible and observed changes be related to invisible processes? In 2008, Chinese business-focused magazine *Caijing* (财经; trans: *Finance and economics*) published one such example, a dispatch from a scientific conference near the glaciers of the Tibetan Plateau. Staff reporters Zhang Ruidan and Li Hujun (the latter, an established science and environment journalist, who co-founded the China Science Reporting Network) wrote:

> "It is clear that the Tibetan Plateau – the so-called 'Third Pole' or 'Headwaters of Asia' – now faces predicted changes (演绎的变化; pron: *yanyide bianhua*) that will not only affect local residents, but also affect people across China and the entire world." (Zhang and Li 2008)

Scientific studies have shown that glaciers are in retreat in the Himalayas, where the rise in mean temperature has been higher than the global average (Matthew 2013), the rate of glacial retreat has accelerated in the past century (National Academy of Science 2012) and the future effects on China's water resources are uncertain (Piao et al 2010). Thus the changes highlighted by Zhang and Li underly some important

questions. To what extent should the policymakers and publics of China's downstream neighbours be concerned about glacial melting, since almost all of Asia's major rivers rise in the Himalayas, mainly within China's borders in Tibet, including the Brahmaputra, the Ganges, the Indus, the Irrawaddy, the Mekong (*Lancang*), the Salween (*Nu*), the Yangtze (*Changjiang*) and the Yellow (*Huang*), river basins that are home to about 1.3 billion people (Bandyopadhyay 2013)? How might the situation be further complicated by the (ostensibly "low-carbon") hydroelectric and water-engineering plans of various countries, including upstream nation China (Pomeranz 2013, Chellaney 2011), given a new green light in the 12th Five Year Plan? Might changes in water availability in the Himalayas, as suggested in one fairly conservative forecast, create population displacement, losses in agricultural harvests, damage to fisheries, disease outbreaks or regional conflict (National Research Council 2012)? Such reporting matters not because it can accurately convey scientific certainties from experts to citizens, but because it helps to frame our collective incertitude – our incomplete knowledge – of such dynamic, complex contexts and their potential outcomes.

Understanding such contexts is further complicated by the demise of linear notions of social and environmental systems, characterised by ideas such as of balance and equilibrium, and the rise of the non-equilibrium dynamics of complexity in socio-ecological systems. (Behnke, Scoones and Kerven 1993, Zimmerer 2000, Ostrom 2009) Ostrom (2009, 419), for example, wrote that resources embedded in social-ecological systems (SESs) were "composed of multiple subsystems and internal variables within these subsystems at multiple levels analogous to organisms composed of organs, organs of tissues, tissues of cells, cells of proteins, etc." In such a complex system, she argued, "subsystems such as a resource system (e.g., a coastal fishery), resource units (lobsters), users (fishers), and governance systems (organizations and rules that govern fishing on that coast) are relatively separable" but, crucially, they interact to produce outcomes at the system level, "which in turn feed back to affect these subsystems and their components, as well other larger or smaller SESs."

There is also a growing understanding of the importance of incertitude in climate change. Despite narratives that might attempt to emphasise the quantifiable risks and

certainties of climate change, philosophers of science have tended to observe the extent to which there is an "inverse relationship between the level of certainty attached to any particular scientific construction and proximity to its site of construction" (Lahsen 2005, 895). In fact, as Hulme writes: "Uncertainty pervades scientific predictions about the future performance of global and regional climates. And uncertainties multiply when considering all the consequences that might follow from such changes in climate." (Hulme 2009a, 83) The Intergovernmental Panel on Climate Change (IPCC), a key boundary organisation on climate science, describes uncertainties in predictions of future warming due to incomplete understandings with regards to questions of: "sources and sinks of greenhouse gases, which affect predictions of future concentrations; clouds, which strongly influence the timing and patterns of climate change; oceans, which influence the timing and patterns of climate change; polar ice-sheets, which affect predictions of sea-level rise." Significantly, the IPCC notes that while further research can reduce these uncertainties, "the complexity of the system means that we cannot rule out surprises." (Houghton 2004, 217)

Leach, Scoones and Stirling (2010) defined a number of states of incomplete knowledge. For these scholars, incertitude is made up of various combinations of specific conditions, characterised as: risk, "a state of knowledge in which possible outcomes are held to be well characterised and it is possible confidently to determine the probabilities associated with each"; uncertainty, "a state of knowledge in which possibilities are held to be well characterised but there is little basis for assigning probabilities"; ambiguity, "a state of knowledge in which there are acknowledged to exist divergent, equally valid ways to frame different possible outcomes"; and ignorance, where both ambiguity and uncertainty exist and the chief characteristic becomes "exposure to the possibility of surprise" (Leach, Scoones and Stirling 2010, Glossary). Thus, the narrative of the climate-change reporter, for example, assumes a particular framing of different possible outcomes and probabilities, assigning a particular combination of conditions of incomplete knowledge to a given context.

Stirling's (2010, 203-205) work on incomplete knowledge outlines a number of further, relevant contours to our understanding of incertitude as it relates to environmental risks and uncertainties: particularly, that even the most apparently complete knowledge may be indeterminate in its implications, for example, because

of the uneven distribution of knowledge in society; that in many cases, especially in fields such as climatology and ecology, increased knowledge may reveal chaotic nonlinear dynamics, meaning that increasing knowledge can actually lead to increased ignorance; that knowledge is not necessary additive, and different findings may in fact be in tension with each other, with increased knowledge producing a more contested, rather than a more comprehensive picture; and that "facts" and "values" may not be effectively independent, with knowledge shaped by wider social, economic and technological commitments.

Thus, different narratives will define and bound systems in different ways, involving different assumptions about the nature of changes in any particular context. Likewise, different boundings tend to imply certain types of responses and styles of action. Framing an environmental narrative with a combination of ignorance and ambiguity might imply a precautionary response that keeps a number of pathways to action open. Framing an environmental narrative in primarily risk-based terms might imply a simpler, more directed response based on a more certain set of outcomes. Of relevance to the "predicted changes" discussed by Li and Zhang, Leach, Scoones and Stirling (2010, 59) have noted the importance of assigning "temporalities" of changes to promote sustainability in a narrative, such as whether changes are represented as "short-term shocks" or "long-term stresses" and whether assumptions about tractability imply that the style of action should aim to "control the causes or drivers of change" (characterised as a "stability" style of action) or aim to "respond" to those drivers (characterised as "resilience"). Thus, our framings of incomplete knowledge take on a descriptive and a normative significance.

I know the environment is changing: General and specific frames

Zhang and Li's *Caijing* article continued by reflecting on the plight of local people displaced by rising lake levels:

> "It may have been impossible for displaced herders to make any connection between what they saw before their eyes (眼前发生 pron: *yanqian fasheng*) and the new-fangled terms (新名 pron: *xinming*) "climate change" (气候变化 pron: *qihou bianhua*) or "global warming" (全球便暖 pron: *quanqiu*

> *biannuan*). However, from scientists' points of view, the increasing melting of glaciers caused by global warming was the main reason for rising lake water levels on the Tibetan plateau." (Zhang and Li 2009)

Climate change does not reflect people's "unmediated observations of the world" (Jasanoff 2010a, 234). As Hulme (2009a, 196) described it: "The source of the risk is distant and intangible – no-one can see climate changing or feel it happening – and the causes of the risk are diffuse and hard to situate." It is a view of the world that has been achieved through abstraction: as Jasanoff has described it, the process of wrenching "phenomena out of their specific contexts," making "parts meaningful independently of wholes" and recombining "segments in ways that transgress boundaries fixed by law, custom, tradition or institutional practice." This, she argued, is precisely what is taken as "the foundation of science's special cognitive authority." Science "is not the only, nor even the primary, medium through which people experience climate." (Jasanoff 2010a, 236)

This is seen, for example, in the statements of environmental activists, themselves, such as an "underground ENGO" activist interviewed by Zhang and Barr (2013, 26), who "didn't need need to follow the scientific arguments about climate change," because:

> "*I know* the environment is changing and it is changing in a bad direction… I can feel it. Autumn should have been the best time in Beijing. But these days it's always foggy. The Birds Nest Olympic stadium is only a kilometre away from my apartment, but I cannot even see it from my window now because of the smog. Another thing that shocked me was in spring 2002, when Beijing was hit by a severe sandstorm. I was to test the white balance function of a new camera. I made many test shots, but every one of them came out yellow. The weather felt hopeless. So I do not doubt that we must do something about the environment and the way we live." (Zhang and Barr 2013, 26. Emphasis in original)

However, climate science destabilises such local ways of knowing through its totalising epistemic image of the world. "To know climate change as science wishes it to be known," wrote Jasanoff, "societies must let go of their familiar, comfortable

modes of living with nature" (Jasanoff 2010a, 236). Disseminating and institutionalising that global, scientific scale of meaning could be taken as an imperative of the 1983-1987 Brundtland Commission, which in its seminal report prescribed a newly transcendent self-image for humanity, transformed – with the local, human-centred view of the environment, displaced – by the first sight of our planet from space in the middle of the last century:

> "Historians may eventually find that this vision had a greater impact on thought than did the Copernican revolution of the 16th century… From space, we see a small and fragile ball dominated not by human activity and edifice but by a pattern of clouds, oceans, greenery, and soils." (WCED 1987, 308)

This is a common environmental trope that predates Brundtland (see, for example, the *Whole Earth Catalogue* series), and today it is echoed by scientists and environmentalists who have embraced the notion of humans as geological agents (see Chapter 7).

There are analogies in the Chinese context, too: almost contemporaneous with Brundtland, in the summer of 1988, China Central Television screened the popular six-part documentary *River Elegy* (河殇, pron: *Heshang*), a paean to the decline of traditional Chinese culture and the rise of an outward-looking, modernised China embracing economic reforms. Its central metaphor was the colour of the Yellow River ("[China's] old social ills are like the silt of the Yellow River which clogs up the watercourse, building up to a crisis"), contrasted with the blue of the ocean, the sky – and, significantly, the Earth as seen from space. The series dramatised the collision of western and Chinese power through this colour-coded, environmentally informed metaphor. "Between an expanding sky-blue civilization [the West] engaging in international trade and a yellow civilization [China] wedded to an agricultural economy and a bureaucratic government," said the narration, "the collision was like mixing ice with hot coals." *River Elegy* concluded that Deng Xiaoping's vision of economic reform through coastal Special Economic Zones, in opening the nation to international trade and investment, meant the opening of China – with all the metaphorical resonances of the documentary's schema – to the sea: "After 1,000 years of isolation the Yellow River finally sees the sky-blue ocean!" (Moser 2011)

Brundtland's optimism, of course, was misplaced. Meaningful multilateral action on climate change has not been achieved. Nor indeed, has China embraced transcendent, sky-blue civilisation: the documentary was officially condemned and banned as a bourgeois anti-communist work that contributed to the "turmoil" of the protest movements of 1989. This is a backlash that seems unsurprising when one reflects on the universalistic insistence on general and systemic framings in the light of what Herzfeld called the "global hierarchy of value": those "surprisingly similar values" shared by "vastly different cultures", which he argued were part of a "homogeneity-producing semiotic legerdemain" promulgated by "the erstwhile colonial powers of Europe" (Herzfeld 2004, 2-3).

In particular, Herzfeld argued that the idea of a "universality of values in an image of irreversible historical process" meant that "local particularities" could take on the character of "flaws" and become "self-confirming" of the "larger morality that sustains them even as it condemns them" (Herzfeld 2004, 20). In the Chinese context, Fong has written about contemporary discourses on backwardness – particularly around China's susceptibility to epidemic disease – that flourish in "conversational zones of cultural intimacy", but are quickly denied when subjects are queried (Fong 2007, 533). How could universal frames expect to displace local ways of understanding the world without resistance? And how might climate change be understood while avoiding this counter-productive reception? Jasanoff (2010a, 238) expanded this question: "how to replace the 'not-but' dichotomy of systemic versus specific framings, with the integrative logic of 'both-and'; how can climate be seen both as a matter of situated 'human activity and edifice' *and* as a function of greenhouse gases mingling with the 'clouds, oceans, greenery, and soils' that pattern the Earth's inanimate face?" The approach that might emerge: the "both-and" — avoiding or transcending either the narrowly bounded particular, or what Comaroff and Comaroff (1999) have called the "violence of abstraction" — would be a cosmopolitan approach to climate change.

As is mentioned in Chapter 1, Beck (2010, 258) noted that "climate change is pure ambivalence" that "releases a 'cosmopolitan momentum'", tearing down borders as a result of interconnectedness and "affording the opportunity of overcoming the nation-state narrowness of politics", towards a "cosmopolitan vision in which people see

themselves both as part of an endangered world and as part of their local histories and survival situations." Hulme (2010, 268) echoed this, noting that "climate change, by dissolving different types of boundaries, is performing significant work in extending and deepening the cosmopolitan perspective." Tyfield and Urry (2009), addressing the potential for a Chinese cosmopolitanism in response to climate change, formulated a descriptive and normative version of cosmopolitanism, drawing on earlier work by Beck, as the opposition "to both the premature universalism of 'global reductionism' and the particularism of chauvinistic nationalism," which rather than referring to a "universality of a global ethic of concern", represented an "emerging, if contested, social force," which did not omit the "striving to alternative models of modernity and self-questioning that makes cosmopolitanism a social force in the first place." Similarly, Beck's "both-and" (Beck 2004, 440) is a close ally of a "contextual universalist" position, seen for example, in the ways that human-rights activists in the NGO movement, working on issues such as violence against women, have needed to transcend relativist and universalist boundaries in order to produce a "cosmopolitanism of humility" that allows the creation of delicate alliances. In other words, Beck argued that such humble cosmopolitanism could allow universal claims to exist without "Western arrogance" (or, as he puts it, "Eurocentric, 'rationalist,' secular-democratic jihad").

However, Latour has taken this cosmopolitanism and destabilised it fundamentally: drawing on Viveiros de Castro and Stengers, Latour (2004, 450-3) suggested that Beck's "peace proposal" – realist cosmopolitanism as an alternative to fundamentalism, of the universal, the particularist or the relativist variety – obscured and misrepresented the "battlefield". For the sociologist (suffering from "anthropology blindness"), Latour argued, the "cosmos" of cosmopolitanism is "simply there" – our "view of the world is, at baseline, the same everywhere." This, Latour argued, is underpinned by a complete confidence in the ability of science to "know *the one* cosmos whose existence and solid certainty could then prop up all efforts to build the world metropolis of which we are all too happy to be citizens." In other words, it was a dishonest attempt to address the both-and, since an assumption remained, that — using our metaphor — the same, Whole-Earth vision of nature could be regarded as an underlying universal.

Latour showed that this assumption of a common baseline, “mononaturalism”, had been problematised by anthropology, particularly Viveiros de Castro’s “perspectival multinaturalism”. By presenting an Amazonian ontology in which “the original common condition of both humans and animals is not animality but, rather, humanity”, Viveiros de Castro (2004, 465-6) had suggested that for some Amerindian peoples, culture did not so much distinguish itself from nature, as nature had distanced itself from culture. Thus the assumptions of modern “multiculturalist” ontologies were reversed and thrown into sharp relief: rather than the “mutually implied unity of nature and multiplicity of cultures – the former guaranteed by the objective universality of body and substance, the latter generated by the subjective particularity of spirit and meaning”, an alternative conception had been demonstrated of “spiritual unity and corporeal diversity… the subject is the form of the universal, while nature or the object is the form of the particular.” (Viveiros de Castro 2004, 466) In this ontology, the “subjective aspect of being” could be the “universal, unconditioned given”, while “objective, bodily nature” has a “particular, and conditioned quality.” Effectively the inverse of Brundtland’s spaceship view of Earth, multinatural perspectivalism sees “reflexive selfhood, not material objectivity, is the potential common ground of being,” (Viveiros de Castro 2004, 467) and in contrast to relativism, where a diversity of subjective and partial representations strives to grasp an external and unified nature, one culture grapples with multiple natures and one epistemology with multiple ontologies.

Thus Latour (2004, 454) concluded that Beck had understood the *cosmos* of cosmopolitan to mean a worldview wider than that of the nation-state, but had limited its potential through his mononaturalism, undermining its multiplicity, its cosmos as understood through William James’s coinage “pluriverse”, which he allied with the attempt by Stengers (1996) to reinvent the cosmopolitan as the *cosmopolitical*, using the “strongest meaning of cosmos”. The battlefield had been mischaracterised; real cosmopolitanism had been placed off-limits, ruled out of the debate, and a familiar assumption had reared its head – one echoed in technocratic notions of governance and deficit-model theories of the public understanding of science – that the cosmopolitan faced not an “enemy whose victory is possible, just irrational people who have to be corrected.” (Latour 2004, 454)

The resulting implication, that perhaps we "never differ about opinions, but rather always about things – about what world we inhabit" (Latour 2004, 455) is one that has its roots in anthropology, but has also shaped science and technology studies significantly — in Wynne's (2005) work, for example, quoted in Chapter 1 — to the effect that superficially epistemological debates may in fact implicate incompatible ontologies. Significantly, Latour did not suggest that it was impossible or undesirable that "in the distant future", people might come "to live in a common world defined as naturalism defines it," much as Brundtland might have hoped for a shared perspective of the Earth as underpinned by science, but he described the effort as proceeding as if the dispute's "settlement were already in place." (Latour 2004, 458) Thus Latour proposed a radical approach to humility, with a spirit not unlike that posed initially by Beck.

So, what might a cosmopolitical framing of climate change be, one that might create delicate alliances, yet sustain or allow a pluralistic view of ontology? More specifically, how as a reporter, might one frame climate change, when confronted with a contestation between scales of meaning, of general and specific frames? Such approaches can be determined and illuminated in Chinese reporters' decisions about whether to frame local weather events in the context of the human causes of climate change, or merely with regard to local referents. Since, as Jasanoff (2010a, 236) has written, the "epistemic claims of environmental science are most trusted when they engage with practices that confer normative authority – not only scientific practices such as peer review," the contest here is often not only between global and local facts, but also between global facts and local values.

The Chinese environmental journalist Liu Jianqiang (2008) demonstrated one illustrative approach in an article describing his visit to his parents' home in Shandong, eastern China, during the Lunar New Year in 2008, shortly after the worst snows in half a century hit China. Liu wrote:

> "As my mother fried me some traditional New Year's cake, we chatted about the blizzards that had paralysed half the country. It was strange that the south had borne the brunt of the bad weather, she remarked, since it's the part of the country least likely to see snow. 'It must be that climate change they talk about,' she said. 'The weather might get stranger, not just warmer.'"

Liu continued that this was the first time he had ever heard his 76-year-old mother, who had spent the first 50 years of her life in a village before moving to a small county town, mention climate change.

> "'You've heard of climate change?' I said.
>
> 'Heard of it? I'm seeing it,' she replied. 'It's much warmer than it used to be. The ground used to freeze around the period of 'light snow' [in late November], and the river used to freeze during the 'heavy snow' [in early December]. Now, it's still warm in late November and the river doesn't freeze when it used to either. We used to wear padded-cotton jackets, trousers, shoes and hats in winter. Who wears padded-cotton shoes now? You don't even need a hat.'
>
> 'When did you start to notice?' I asked.
>
> 'The year that Yao He was married, I think. I don't recall the actual year. But his son is grown up and married now.' Yao He comes from our same village; my brother was at his wedding celebrations. I laughed because that would mean the warming started three decades ago. My mother said the wedding was in December or January, but it was so warm that nobody kept their jackets on. 'When you were little, it got as cold as -18 degrees [Celsius], now the coldest it gets is -10. That's a huge difference.'"

Liu noted that his mother first heard about global warming from the television news, but that she didn't "rely on the news… to tell her why it's happening. She has her own opinions."

> "'There are too many people, too many cars and too many factories. And there are fewer trees and less water.'
>
> In the past, she said, there were more forests, with cool air under the trees. There was a pine forest near my grandmother's village and you could hear the rustling of the trees and the cooler air as you approached. 'It was cut down ages ago,' she said. 'It's all houses there now. Trees absorb carbon dioxide and release oxygen. Without forests, the temperature's going to go up.'

My mother also blames the increased numbers of factories for the warming. ‘Get out of a car in summer and it’s like stepping into a furnace. Why? All that hot air has been blown out of the car. Just like factories: all those factories burning coal must be releasing hot air and carbon dioxide.’

The country’s largest paper-making group is based in the outskirts of our small town, along with a large fertiliser factory, two breweries and a great number of smaller factories. Taxes from these industries help to rank our county government as the thirtieth richest county of 2,000 counties in China.”

Liu had explained that for his mother, climate change wasn’t news from nowhere – it was something that she had seen, heard and felt – but neither was it “global fact” detached from “local value”. Climate change might have been spatially unbounded in the scientific imagination, but here it had a local scale of meaning, informed by political and moral values about local development. As Liu explained, this even seemed to account for her “scientific misunderstandings” about climate change – a temperature rise that might not fit with scientific models, a confusion between local pollution effects and global systems – since his mother had bounded her narrative closer to home, and assigned blame at a local level, making a link between her social world and the global imagination of climate change. Liu, rather than displacing her frame with the weight of scientific authority or the violence of abstraction, has demonstrated the humility of a both-and approach.

“I then asked: ‘Are climate change and pollution the same thing?’

‘Yes,’ my mother replied. Factories produce heat and emissions when they burn coal, she said. ‘When I was young there wasn’t any pollution. The sun was scorching hot when it shone through the clouds: we used to say it was as cruel as a stepmother. Where do you see a blue sky – or even the sun – nowadays? Step outside around here and it’s nothing but grey, like the clouds have fallen down. Even the sun appears hazy!’

The lack of water in the rivers is also worsening climate change, my mother believes. Thirty years ago, the river in our village was wide and deep, but it suddenly dried up, exacerbating the loss of groundwater. Before 1976, there

> was water two metres below ground level and my mother could lower her bucket down the well on its pole. But that year we dug our own well, and we had to dig five metres before hitting water. Two years later, it was nine metres. By 1980 it was 20 metres; now even 30-metre-deep wells are dry. Our village was named for its two wells; the stone edges of the wells had deep grooves that were rubbed by the ropes used to haul buckets for six centuries. In only 10 years, environmental degradation killed off a 600-year-old tradition.
>
> The cause was the large number of salt, soda and chemical plants built kilometres away. Two pumping stations were built near our village, which sent water to the factories through metre-thick pipes. Soon, the county's four rivers had all dried up. It was the first time the county, with a population of one million and records dating back over two millennia, was left without a single flowing river."

Reflecting on a conversation with an American scholar, who had asked him if Chinese people might be confusing climate change with air pollution in response to public opinion surveys, Liu wrote pertinently: "Chinese people do tend to confuse climate change and pollution. But for an ordinary Chinese person like my mother, the two are very closely related. Her perspective is not the same as that of scientific reports; she is responding to the decades of changes she has seen throughout her lifetime." In Liu's framing decisions, he refused to remove his mother's knowledge and values from context.

There is an analogy here with Weller's argument that while his informants in Taiwan and Tianjin might not have been "concerned with the same issues as national and global elites, or as people who write questionnaires about values," they did not lack "environmental consciousness." Rather there is a "slippage" in the theoretical idea of "environmental consciousness," which has been articulated in ways that do not take account of how the environment might be understood in terms of "temples, *fengshui*" and so on, but instead has tended to privilege a "historically particular form of such consciousness" (Weller 2006, 157-8). Lora-Wainwright (2013) has drawn upon this productively in the analysis of how epidemiological uncertainty is intertwined with local economic and political configurations in industrialised rural Yunnan. Lora-Wainwright argued that the complexity of illness causation was well understood and

articulated by villagers, whose environmental consciousness included a keen awareness of "the narrow boundaries around the hard evidence required to prove that pollution is correlated with illness." This understanding had led to a number of strategies for action that took into account the uncertainty in *locally meaningful* ways, including opting for compensation, "rather than demanding less pollution" and through "individualized strategies for coping with risk," such as the wearing of "Chinese medicine plasters."

In Liu's case, his approach suggested a powerfully cosmopolitan imagination of climate change, but he also may have had an advantage over many reporters: in writing about his mother's knowledge and observations, he could understand in unusual detail how her values and indeed her subjectivity was implicated in her notions of science and development. In reporting other environmental events, how might a reporter's practices grasp this pluralistic, cosmopolitical vision? Especially given not only the push to general frames among environmental advocates, but also more significantly, as Leach, Scoones and Stirling have written, the pressures and powerful imperatives that tend to "deploy knowledge as a means to justify, persuade, legitimate [and] very often force a process of 'closing down'" toward a risk-based narrative, as opposed to one where uncertainties, ambiguities and ignorance – "where 'we don't know what we don't know" – might be included in a narrative (Leach, Scoones and Stirling 2010, 78). It is a process I understand as a manifestation of what many other scholars, including Agrawal (2005), Brosius (1999), Chatty (2002), Escobar (1999) Goldman (2006) and Scott (1998), have explored: the ways in which the institutionalisation of sustainable development has marginalised, displaced or precluded certain motives and actors from the environmental arena. In particular, how environmental actors, institutions and discourses "insinuate and naturalise a discourse that excludes moral or political imperatives in favour of indifferent bureaucratic and/or technoscientific forms of institutionally created and validated intervention," (Brosius 1999, 38) a process described by Leach, Scoones and Stirling (2010, 87) as the way in which "ideas, institutions and practices reinforce each other… certain pathways become 'motorways', unrolling powerfully across the landscape of understanding and intervention, narrowing other tracks." I found that in reporting the impacts of climate change, the practice of many Chinese environmental journalists attempted to resist such closure by taking the form of a "radical interpretation" of

landscape, a kind of "mapping" that saw the natural and social worlds as a whole, and did not make prior framing assumptions about scales of meaning or conditions of incomplete knowledge.

The notion of "radical interpretation" has its roots in the philosophy of Donald Davidson, but my use of the term primarily stems from the work of Hastrup (2005, 2009), who identified the contemporary epistemological paradigm as that of "pragmatic enlightenment", marked by the practice of "radical interpretation", having shifted away from "clarification", Hastrup's term for the dominant form of science in the 17th and 18th centuries. For Hastrup, "radical interpretation implies that the scientist adds his or her own understanding of the world by making connections, inferring meanings and suggesting new understandings. The nature of things is not thought of as a given in this view of the world." (Hastrup 2009, 10) Hastrup's proposed radical interpretation is not aligned with what she calls "speculation or endless hermeneutic contests". Rather, it suggests that whereas "the old enlightenment explorers saw their task as a kind of mapping in the strict cartographic sense of the term, that is as an objective representation of the world as seen and illuminated, we have a more dynamic notion of mapping today." (Hastrup 2009, 11) Here, Hastrup cited Ingold (2000, 232), who defined mapping as "the re-enactment, in the narrative gesture, of the experience of moving from place to place within a region". Referring to Icelandic practices of naming the landscape, Hastrup argued that there was no question of "decoding" the landscape: "There is no code to be deciphered, no map to be read as such. There are clues to be understood, clues that connect people in a space, where the social and the natural worlds are seen as a whole, of which people cannot have an external perspective." (Hastrup 2009, 13)

The two examples that follow are of what might be called hydropolitical landscapes, involving complex interactions between biophysical systems, socioeconomic systems and geopolitical systems (McNally et al 2009), particularly around Dalai Lake and the Mekong River. In these cases, I have identified how Chinese journalists have begun to map the two landscapes as natural and social systems, including attention to national borders and thus confronting the characteristic topographical challenge of boundary-crossing, ambivalently cosmopolitan ecological problems. Both also engage with climate change, not only in the classically scientific sense, but also in that they

become implicated in the sociopolitical-natural hybrid known as "climate change", or what Hulme (2009a, 327) calls "upper-case climate change". The narrative "mapping" of these landscapes by Chinese environmental journalists are not comprehensive, but they both point in different ways to the potential, and the pitfalls, of a cosmopolitan "both-and" framing of climate change that disrupts the universalism of general frames, as well as a pushing back against the process of closing down more pluralistic narratives with regard to risk and uncertainty in the attribution and characterisation of the temporalities and causes of change.

Dalai Lake: Two kinds of truth

Inner Mongolia's Dalai Lake, or Hulun Lake, is northern China's largest freshwater lake and the fifth biggest in the country, nestled just within the People's Republic of China, on the borders of both Russia and Mongolia. According to a list produced by the Ramsar Convention, an international treaty for the protection of wetlands signed by 161 parties including China, Dalai Lake is a 740,000-hectare National Nature Reserve retaining "near-natural conditions" and a "staging area in the East Asian-Australasian Shorebird Flyway" (Ramsar 1972). Its landscape "has great significance for flood storage, sediment retention, and groundwater recharge, and is critical for maintaining regional climate and increasing air humidity." According to another conservation website, it is also the site of a "trilateral protected area" that is "of special importance for biodiversity conservation" (Simonov 2008).

There is an obvious visual premise for any story about the lake: it is visibly shrinking. A state-media article about the lake quoted the deputy director of the Dalai Lake National Nature Reserve Administration: "If the lake continues to shrink, it may soon disappear" (Xinhua 2008). The lake, the article said, had been affected by falling precipitation levels, which had also degraded the nearby grasslands. Water availability is thus a contested issue locally and among the bordering countries: the Inner Mongolian city of Hulunbuir proposed to divert 1.05 billion cubic metres of water every year from the 3.7 billion that flow through the nearby Hailar River, which forms part of the border between Russia and China, to replenish the lake. In April 2006, SEPA approved the plan and began work the following year. But Russia opposed the plan, claiming that 1,500 square kilometres of river banks would be damaged. The project was temporarily shelved, then restarted and finished, but at a

less ambitious scale: taking 390 million cubic metres per year.

I spoke to one journalist who had covered the story, a young Beijing-based environmentalist I will name “Liuwei”. He was in his early 20s, had studied sciences at university but never finished his degree, and had since worked with a range of environmental NGOs. Liuwei told me that he had been researching the lake from Beijing for three months, after a 12-day trip to the lake. For him, the basis of the story was indeed the visible premise: falling water levels had left vast expanses of sand and dirt between the grasslands and the water. How did Liuwei map the lake and its problem, and which narrative(s) emerged about it? His interpretation of these visible changes in the landscape, he said, was shaped by the clash of two major narratives. On the one hand, what he called official opinions (官方意见 *guanfang yijian*), on the other hand, civic voices (民间声音 *minjian shengyin*). He explained that according to the official narrative, the lake had been shrinking for 20 years due to drought caused by climate change. There was no man-made (人为原因 *renwei yuanyin*) cause of the shrinking. According to the civic voices, the lake had been shrinking for 20 years, but the drought had become more acute in recent years, and there was a direct, human cause: the mining industry. Note in particular that, at least for the purposes of this explanation, Liuwei did not include “climate change” among human-caused phenomena, but among natural phenomena, implying that even if climate change is human-caused, blame could only be attributed at a systemic level, and not assigned to local actors or institutions.

The dominant narrative here had thus bounded its frame at a general, global systems level, emphasising intractable changes and long-term stresses with drivers that could not be attributed or blamed on institutions or actors at the local level, particularly the huge copper and molybdenum mine near the lake, run by a subsidiary of state-owned China Gold. In a border region where water was disputed, this omission is a significant absence in the framing of government-controlled media reports about water in the Dalai Lake region: for example, the state media report I excerpted above does not mention mining at all. However, Liuwei chose to visit and photograph the mine, and spoke to locals, who described it as a “scourge” and a major consumer of water that had its own supply channels that were draining the lake. For Liuwei, this local narrative, which emphasised different temporalities, causes and uncertainties,

had to be a part of the story. In order to report it, he told me, he spoke to university researchers and to environmental NGOs; he did Internet research; and he added to these sources his own observations. It was a “difficult” place for him to investigate, he said, but he hired a car and asked the driver to accompany him on his interviews for safety. In the environs of Dalai Lake, he spoke to the local government and to an environmental NGO. This NGO introduced him to another ecological framing of the lake environment: they told him it was like the “kidneys” of the grasslands, he said, and particularly important for preventing their deterioration – perhaps more important than climatic changes.

How did he interpret the landscape? It was problematic, Liuwei concluded: there were many things he still didn't know or understand. There were many uncertainties and unknowns. But, he said, the situation – of a threatened socio-ecological system, shaped by the competing interests of three countries – had been little discussed and rarely covered in the media, despite its similarity to the better-known hydropolitical conflicts that year on the Mekong River (see below), and it was therefore worth discussing. He had found a contradiction between government and civic framings, but he hadn’t refuted or debunked either of them. Rather, his reporting had mapped the space in a holistic fashion and made visible a greater number of clues, bringing into view a number of alternative framings and conditions of incertitude, making visible a network of people and processes implicated in a contested landscape. This engagement with the landscape, Liuwei told me, meant he didn’t regard himself as a conventional journalist. His approach, he said, was more that of the NGO activist, or – then, he corrected himself – an “NGO-journalist”. He wanted not only to understand everything, he said, but also to solve it. Not to see and report a story, and then leave the scene forever. Thus – as I interpreted it – his simultaneously descriptive and normative engagement with this landscape meant sustaining plurality: keeping a number of frames open, and being open and humble about uncertainty and ignorance, while resisting the pressure to close down toward a single narrative.

Liuwei’s interest in this story had been piqued at meeting of an environmental NGO in Beijing, known in English as Green Beagle, after the ship of Charles Darwin's famous voyage. In Chinese, the group is known as the “Darwin Nature Knowledge Society” (达尔问自然求知社 *Da'erwen ziran qiushehui*), and could fairly be

described as a citizen-science group. For example, when a public controversy erupted at the end of 2011 about the yawning gulf between Beijing's official and unofficial air-pollution statistics, Green Beagle helped to organise residents to use home-testing kits and post their own air-quality readings online. Similarly, Zhang and Barr (2013, 39) mention the group's use of the Weibo microblogging platform to publicise water pollution photos along with related data. At Green Beagle, a speaker from a Harbin-based NGO had spoken about the ecology of the region. Liuwei had also heard about a funding opportunity from a development organisation for journalists interested in focusing on biodiversity issues, and decided to pursue the story using the small grant he received. He said there was nothing else in Beijing quite like Green Beagle: an organisation that ran regular events on a range of environmental topics, which were "very open" and aimed at the public.

Although many journalists were in attendance, these were not media-focused events like the regular Green Reporters' Salon, organised by the veteran anti-dams campaigner Wang Yongchen. Besides regular walks along the waterways of Beijing to observe wildlife and changes in the landscape, Green Beagle organised itself into "schools" or "faculties" (学院 *xueyuan*) for its programme of talks and discussions, including: the botany school (草木学院 *caomu xueyuan*); the water school; the environmental health school; the birds-and-beasts school (鸟兽学院 *niaoshou xueyuan*); the garden school (园林学院 *yuanlin xueyuan*); and the solid waste school (垃圾学院 *laji xueyuan*). During my fieldwork in Beijing, I attended numerous Green Beagle events, including meetings of these schools, open lectures about various environmental situations — from saving wolves and wild horses in Inner Mongolia to wildlife photography in Yunnan and environmental activism in Tibet — and attended meetings of the organisation's "citizen journalism" training programme (see Chapter 7), which encouraged local bloggers to investigate and report local controversies around waste incinerators, solid waste provision and toxic pollution, among other things.

Almost every time I attended, Green Beagle brought together a lively mix of amateur naturalists, students, journalists and NGO activists. The group was founded by Feng Yongfeng, one of China's better-known environmental journalists, an employee of *Guangming Daily*, an influential state-owned newspaper traditionally associated with

China's intellectuals and the registered minority parties. Feng has a long-standing interest in how China's environmental problems are understood by citizens: in his writing, he has frequently championed the cases of non-experts engaging with their environments, such as Liu Zhenxiang, a taxi driver who came up with his own solution for Beijing's chronic drought. In 2007, when the Beijing Environmental Protection Bureau called for public suggestions on creating a green Olympic Games the following year, Liu submitted an article – 28,000 characters long, equivalent to around 14,000 words in English – titled "Drought in Northern China: Its Causes and Solutions". Feng wrote that Liu's essay had identified the origins of the drought as being a vicious cycle: decreasing precipitation, declining groundwater, less evaporation and continuing drought across the region. Liu proposed a three-step solution: a programme of reforestation; letting water out of reservoirs to boost groundwater reserves; and storing water in wetlands, marshes, ponds and pools across the farmland around Beijing. The cabbie told Feng that he saw the land "as a person", with the rivers "as blood vessels", and pools that "keep the blood circulating". Beijing was massively overexploiting its groundwater. In the suburbs of Beijing, said Liu, residents had to dig ever deeper wells before they saw any water. "If my water storage plan were put into action," he continued, "we could stop these plummeting groundwater levels." But Liu Zhenxiang's plan was never adopted – and Beijing's water troubles have continued beyond the Olympics (Geall 2013b).

Feng also helped to bring to public attention the efforts of Liu Futang (no relation to Liu Zhenxiang) who took to using his Sina Weibo account to expose environmental destruction in the island province of Hainan, in the South China Sea. Liu Futang was a retired forestry official who had once piloted fire-spotting planes in northeastern China. Liu started his microblog upon retirement in 2011, since he had become concerned about the environmental and social impacts of the island's transformation into what he saw as a playground for elite tourists from overseas. (The island is famous for its beaches, and perhaps best known for the Boao Forum for Asia, an international gathering of business and government leaders modelled on the World Economic Forum at Davos.) The development of Hainan island meant that farmers were resettled and fields and bays were ruined. So, when Liu discovered that a state-owned property developer planned to build a marina on the south-eastern coast, which would destroy a mangrove forest of nipa palms, an important element of the coastal

ecological balance, he became worried. Not a word about the planned marina project had appeared in the local media. Using the handle "Hainan Liu Futang," Liu started microblogging about the proposal. The story soon picked up momentum: the day after Liu first posted about the story, a reporter from Beijing had arrived in Hainan to speak to him. Soon, Liu had given nearly a hundred interviews. When government officials came to speak with Liu about the controversy, he posted their conversations online. In the end, Liu's campaign didn't save the mangrove forest, though subsequent developments in the region were stalled.

But in spring 2012, Liu used his microblog to voice criticism of the proposed construction of a coal-fired power station on the southwestern tip of the island. In March and April, thousands of people demonstrated against the plans, and Liu was there to microblog their progress. Significantly, Liu included some of this online commentary in a book, which he published at his own expense. Feng had written (Feng 2012) that Liu and other citizen journalists "embody the environmental responsibilities of the citizen and demonstrate that today it is becoming easier for anyone to protect the environment." Yet on December 5, 2012, the Longhua District People's Court in Hainan found Liu Futang guilty of "illegal business activities." The court imposed a 17,000-yuan fine and a three-year prison sentence, which was suspended. His crime was the private printing, giving away and selling of his books, based on his blogs, about his local environmental protection efforts.

Such groups and examples give a sense of the marginal, edge ball context in which cosmopolitan, plural perspectives such as Liuwei's have started to take root, but aside from these contemporary influences on what he called NGO-journalism, Liuwei's approach had a number of antecedents. One that is illustrative of Liuwei's approach to science and interpretation is an open, group blog and print publication aimed at young people in the environmental NGO movement that he helps to produce, which explicitly draws its fonts, design and other aesthetic elements from May Fourth Movement publications from 1919, particularly *New Youth* (新青年 pron: *Xin Qingnian*), often known by the French translation that appeared on its covers: *La Jeunesse*. Writing about prominent position of dissident scientists, so-called "scientific liberals", in the political debates of the late 1980s, Miller noted that May Fourth provided an important antecedent for this generation, too. Scientists were

aware, Miller wrote, that they were part of a "longer story" about the "evolving relationship between knowledge and power" and the "place of science in a modernising China" (Miller 1996, 241).

China is now described, quite plausibly, as "the world's largest technocracy" (Wilsdon and Keeley 2007, 6) and its history of scientism stretches back to May Fourth. This considered all reality "within a natural order and [deemed] all aspects of this order . . . to be knowable only by the methods of science" (Kwok 1965, in Boland 1998, 34). Boland has shown how environmental contention in China has been shaped by scientistic dogma, noting how both sides of the debate around the Three Gorges Dam in the late 1980s still "appealed to the authority of science and measured the success of the decision-making process in terms of the involvement of scientific and technical experts." (Boland 1998, 27) Thus Liuwei's embrace of May Fourth imagery hints at another twist in his "radical interpretation" approach: a sense that by bringing to light plural perspectives and under-explored clues, his work was true to a particular spirit of scientific inquiry, albeit not a scientistic or technocratic one — a theme that recurred throughout my interviews with environmental journalists (and I return to in the next chapter).

His encounter with plural narratives also brought to mind earlier accounts of Chinese journalistic practice. Liu Binyan was a noted writer and reporter born in 1925 in Shandong province. Liu joined the Communist Party underground in 1943, before Mao Zedong came to power. After the revolution in 1949, Liu worked as a reporter and editor for the state-controlled *China Youth Daily* – still an influential newspaper today. Many years later, in an interview with the writer Perry Link, Liu said that he found this work "fairly unappealing." "There was lots of recording of the words of the leaders and mechanical passing of them down to the readers." (Liu and Link 2006, 3) Liu tired of working as the "throat and tongue" of the CCP. As his reportage strayed into pioneering criticisms of censorship and corruption under the communist regime, journalists and editors initially praised his daring.

By 1957, however, Liu had been labelled a "rightist" during Mao's notorious first crackdown on critical intellectuals, the Anti-Rightist Campaign – an act of brutal suppression, which as mentioned in Chapter 2, had come on the heels of the supposed liberalisation of the "Hundred Flowers" movement. He was expelled from the Party

and sent down to the countryside for “re-education.” Soon after the end of the Cultural Revolution – and after a period of rehabilitation followed by eight years spent in a detention camp through much of the 1970s – Liu Binyan delivered a talk, on 9 November 1979 at the Fourth Congress of Chinese Literature and Art Workers in Beijing, recounting a powerful tale of official and unofficial narratives, or, as he called it, two kinds of truth:

> “In my own personal experience, the most unforgettable years were 1958–1960, when I shared a bed and even sometimes a quilt with poor peasants. The things I saw in the villages, and the plaints I heard from the peasants, were all vastly different from what was being spread by the authorities and the press ... For example, the higher authorities told us that our impoverished gully of a village ought to build a zoo and a fountain ... With no water source – with man and beast still drinking rainwater – how were they to build a fountain? A struggle began to rage deep inside me: how could two diametrically opposed ‘truths’ coexist in the world?” (Liu and Link 2006, 31).

The speech was met with rapturous applause. But nine years later, Liu was forced to leave China. He died in the United States in 2005. The writer Su Xiaokang wrote upon his death: “Banishing him was like tearing him from the breast of China; the hardship of his survival is not adequately expressed by a pallid term such as ‘exile’.” (Su 2006, 59). Thus Liu’s noted phrase also stemmed from a contradiction in framings of water scarcity. Sentenced to reform-through-manual-labour in poverty-stricken Shanxi province, in northern China, Liu had been struck by the notion of fountain being proposed in the mountain village's “Main Street”, despite the scarcity of groundwater, which was needed by cave-dwelling peasants whose fields were also being destroyed for a “miniature Summer Palace” and whose labour was being channelled – as across China during the Great Leap Forward – into the production of iron in makeshift backyard furnaces (Liu 1990, 98).

In 2009, another Chinese climate-change journalist, “Feng”, told me:

> “...if you talk to my colleagues from government media, they will tell you ‘everything's great’... Sometimes people say the western media is critical of China; sometimes I agree. But I think good western media is always critical of

any government. In China, we really report government, but we don't report much truth."

Thus, searching for truth in journalism is often not about scientific certainty or singular narrative frames, but a process of radical interpretation, a descriptive and normative engagement with contested natural and social landscapes and the resistance to narrative closure by dominant actors, with an emphasis on making visible the contradictions and uncertainties that mapping uncovers. It is a scientific endeavour, but a critical one that goes beyond scientistic assumptions. Riding the Beijing subway with another environmental journalist from Beijing (and a close friend of Liuwei's) "Ming", I raised the subject of science. Ming, who had studied management & information science at university, told me she had wanted to be a scientist since elementary school, but at high school she realised that the real challenge was "making sense of information," particularly in an information-overloaded society. This was why she wanted to do management, she said, to make the world work more efficiently.

Later, Ming continued, she had decided that efficiency wasn't the important thing for the world, so she turned to journalism — it allowed you to highlight the bad and the good. She started telling me in detail about *Three Body* by Liu Cixin (2008): the first in a series of science-fiction books, the name is taken from the "three body problem" in classical and quantum mechanics. I asked Ming if she was still a scientist at heart. Science may, in fact, have surpassed thinking-about-science, she said. Perhaps, Ming continued, we no longer have the intellectual capacity to deal with new technologies and new threats. I responded: isn't science a way of thinking through that problem? Of course, she replied: It's about logic. But, she continued: Do I understand Chinese logic? The logic that guides an authoritarian government, that treats people like children rather than citizens?

The Mekong: Framing powersheds

The Mekong River flows for 4,880 kilometres, from the Tibetan Plateau through Yunnan, into Laos, Thailand, Cambodia and Vietnam, as well as forming part of China's border with Myanmar and Thailand's border with Laos. It is known for its variations in seasonal flow; the importance of the lower Mekong basin to the ecology

of downstream countries, particularly Laos and Thailand; and its role as a trade route. Its role as a producer of hydroelectricity is more controversial. As McNally et al (2009, 289) have noted, in the context of rapidly developing societies, "socioeconomic and physical changes that raise energy and water security concerns have traditionally been addressed by constructing large-scale hydro-modification structures (dams, channels, levies)." In the case of the Mekong, it has been the object of sharply conflicting demands, with proposed hydropower development by China on the upper Mekong — which sees the river as a potential "powershed" — generally construed "as in conflict with downstream demands for fish habitat protection, shipping, and agriculture."

The primary transboundary institution on the river, the Mekong River Commission (MRC) does not include upper riparians China or Myanmar as members and is generally seen as defending the interests of downstream countries Cambodia, Laos, Thailand, and Vietnam against China's "unilateral" development schemes. Yet, as McNally et al have written (2009, 289) "the Electricity Generating Authority of Thailand (EGAT) is a joint investor in two of the Chinese dams, and the MRC's newest strategic plan embraces the possibility of hydropower development on the main trunk of the Mekong", meaning that the MRC "may find its effectiveness challenged as it seeks to balance increasingly disparate demands on the Mekong." According to Chellaney, a hawkish analyst from India who has warned repeatedly that China's water engineering plans threaten regional security:

> "Of all the river basins in Asia, the Mekong has attracted the greatest international attention in recent years, largely because of upstream dam building on a massive scale. This basin holds the seeds of possible inter-riparian conflict." (Chellaney 2011, 265)

From late 2009 through early 2010, a drought struck southwest China, affecting more than 50 million people, according to official news reports. Some reported that it was the worst drought in China since the founding of the People's Republic in 1949; others added it was the worst in a century. Rivers shrunk to between 30% and 80% of their usual volume and some dried up completely. Yunnan was hit the hardest, with the drought reportedly affecting 85% of the province's land. Downstream countries on the Mekong River were also hit by drought that season: stretches of the river were less

than a metre deep, its lowest level in decades, making the river impassable to tour boats and cargo ships. Considering the intertwined biophysical and geopolitical contexts outlined above, it is perhaps unsurprising that the blame in some cases came to rest on Chinese water engineering projects. Media reports, mainly from Thailand, suggested China had failed to release enough water from dams upstream, a claim that Chinese officials, engineers and some scientists denied. An editorial in the *Bangkok Post* was headlined: "China's dams killing Mekong." (Stone 2010)

As in the case of the Dalai Lake, decisions regarding the framing of environmental knowledge became highly controversial, and a Chinese "official narrative" emerged that the system should be bounded outside of the regional hydropolitical system: in other words, that global climate change was to blame. Poor rainfall and unseasonably high temperatures were responsible for the drought, the official news agency Xinhua said. Another state media report quoted a hydropower official saying that Chinese dams had helped drought-stricken downstream countries, since they "helped to manage water flow by storing water in the rainy season and releasing water in the dry season."

A news report in the official China Daily (Cheng and Ma 2010) was titled "Climate change to blame for Mekong drought", and said that "activists" in the MRC countries had sought to "blame upstream Chinese dams" without justification. Yet despite marginalising the contrary opinion of "activists" by reducing it a single line and thus producing a singular, climate-change-centred framing in alignment with Chinese geopolitical interests in the region, the article later takes international environmental NGOs as a marker for objectivity, favourably quoting Ma Chaode, the "Director of Freshwater Program, WWF China" as having said: "The drought is a natural phenomenon in the ecosystem process and, with the climate change in recent years, and an increase in extreme weather… it's unfair to say this is China's responsibility" and then decrying the "politicisation" of the environmental situation in the region and appealing for balance (politicisation and balance are topics I will return to in the next two chapters), by quoting a Chinese international relations expert as having said: "It does no good for countries involved to blame each other, or to try to politicize the problem. The only solution will be to face the fact, admit it, and calmly weigh the pros and cons."

I spoke to a number of Chinese journalists about how they had covered the story. Most Beijing-based reporters that I interviewed had only reported the story in brief, or used it as a background to wider reports about climate-change impacts. One said: "I asked why the drought happened. I had a personal talk with the leader of the China Meteorological Administration, and he told me one of the reasons for the drought was climate change." Asked about the effects of the drought on Mekong countries, he said: "I am interested in this topic, but I didn't write about it. […] There are some international rivers in China, and we should pay attention to people living along the rivers." However, some reporters had chosen to avoid this frame, distrusting its scientific validity. One reporter told me: "We write stories about the lives of ordinary people, such as those affected by the drought in southwest China, or by flooding or other extreme weather. But because there is still no hard evidence supporting climate change – and weather systems are very complex – I cannot say that extreme weather is the consequence of climate change, but only describe people's lives." The *Economic Observer* newspaper and *Phoenix Weekly* magazine both published commentaries by the historian and public intellectual Qin Hui, which suggested China's political strategy on the Mekong River had been misjudged – and that greater transparency was needed to really understand the positive and negative downstream impacts of hydropower projects.

One young environmental journalist I spoke to, "Zhiyuan", pointed towards the complexity of covering the story. Like Liuwei, she saw her role very much as to map the landscape of natural and social framings and narratives, and while she came to somewhat different conclusions, her particular ethic still had the sense of pointing towards a cosmopolitan framing of climate change. Zhiyuan had heard from a well-established journalist and environmental activist that Chinese commercial forestry projects in the Mekong region "might be related" to the drought: specifically, that trees were acting "like pumps depleting water". An opinion piece appeared in the tabloid *Beijing News* that proposed this notion. However, on further investigation Zhiyuan said she found that "scientists denied this" and consequently that it was an advocacy-driven opinion she could not defend. Significantly, she concluded that it was not a rational opinion, much as she thought it was difficult to find a "rational anti-dam expert": she found that the drought was also being blamed on Three Gorges. "I don't know if it's related or not. It's hard to be an environmental journalist, you don't

give a conclusion." Zhiyuan complained that press releases from the environmental group Greenpeace were reproduced wholesale by media outlets, as was material originating on the "New Left" *Utopia* website. While in some ways reflecting the scientism of environmentalism's official critics, Zhiyuan's sense of environmental knowledge was that facts and values were not independent, but were, in fact, intertwined with interests and wider social commitments (see Chapter 5 and Stirling 2010, 9).

Conclusion

This chapter has introduced how the framing of climate change, a complex, uncertain and destabilising force that made humans geological agents in a "post-natural" world, is a politicised and contentious issue that exposes a tension between the universal and the particular. Central to this problem is that science is not the primary medium through which people experience climate, and the knowledge that climate science introduces is thus profoundly destabilising. A central concern becomes how one might find a cosmopolitan, or indeed a cosmopolitical approach — a both-and, plural stance that understands the ontological dimension of superficially epistemological disputes and can draw on the transcendent image of the sustainable development moment, while appreciating the dangers of such universal imaginaries that condemn local particularities as flaws and appreciating the political reality of the local and the specific.

In the context of a political structure that attempts to control what is known and thought as part of its strategy of governance, reporters within the "game" must encounter multiple realities. However, these realities – even when they contradict each other – are not fakes: they describe worlds that exist. As Latour explained, when we accept that in the sciences, "the degree of objectivity and certainty is directly proportional to the extent of artificiality, layering, heterogeneity, multiplicity, and complexity of mediations," we might begin to distrust the idea that "*fabricated* means *untrue*, and *made* means *fake*," and better formulate a cosmopolitical approach (Latour 2004, 460). This chapter finds that the edge ball space is somewhere that Chinese environmental journalists practice a type of radical interpretation that can take such a cosmopolitical approach to multiple ontologies by mapping the complex and uncertain interactions of human and natural systems.

Faced with controversial framing decisions that necessarily involve blame and the closing down of options, journalists have responded by opening, by keeping plural frames, and plural truths in play. Thus, they have reported not with scientistic certainty, but with plurality and humility, profoundly radical and open perspectives that can better map – and thus navigate – a complex and uncertain landscape. Liuwei told me that he had at that point only been to a few places in China outside of the cities. The cities, he felt, were all the same, but he didn't know much yet about the countryside, biodiversity or ethnic minorities. It would be necessary to learn about these aspects in order to understand China, he said. These multiple stories were all parts of China. In the following chapter, we explore how such a radical interpretative attitude fares when global scientific controversy is introduced.

Chapter 5: Controversies

On Chinese New Year, 2010, in Beijing, a deer made of plastic fairy lights looked at us from the edge of a dry canal. Fireworks popped and echoed through the chilly night. I had left the apartment with "Xing", an environmental journalist, and her husband to walk through the deserted, campus-like shopping and entertainment district built opposite her husband's parents' home. The east third ring road, not far from where I now lived, was home to Italian and Korean restaurants, karaoke bars, brothels and upscale apartment complexes, like that of Xing's in-laws, built in the last decade. That night's four-hour gala on the state-owned China Central Television (CCTV) had become too boring and nationalistic for them. As we left, a chorus of female fighter pilots came on screen.

It was deserted that night, Lunar New Year, when most families eat together at home. "That bar is for lesbians," explained Xing, pointing at a brightly lit, shuttered establishment with a smile; pride in her unofficial type of local knowledge. She liked this new, commercial development. A few years earlier, Xing had worked on the television spectacular we had been watching. It was a nightmare, she said. A web of cavernous studios, bitter cold in February, brimming with confusion: choirs of children; dance troupes from the country's recognised ethnic minorities; diva-like singers who, she claimed, paid the station to appear on the career-making national programme, rather than the other way round. Xing had been a television and online journalist for state-controlled media and later became an environmental journalist.

Months after our walk, she would withdraw from that world too, thin and unhealthy, under pressure from her in-laws about the political risks, the long hours and poor compensation. After dinner, half-watching the television and drinking coffee from southwest China, we had scanned the many magazines and newspapers on her in-laws' table and skipped to the environment pages. They had the last few editions of *Southern Weekend*. "They rejected Copenhagen," said one headline, referring to the recent UN-led climate-change talks there only weeks earlier. Xing made me listen when a *xiangsheng* (相声 trans: *cross-talk*) comedian made a fleeting reference to the climate conference in his routine. Switching channels briefly, we watched the opening ceremony to the Winter Olympics in Vancouver. An icy bear appeared to melt in the stadium and Inuit dancers lamented theatrically.

Xing's father-in-law asked me about my research. I told him I was studying the environment, climate change and sustainability in China. With a smile, he responded: "*neiwai youbie*" (内外有别). Literally, this translates to: the inside and outside differ. What he meant was: there is a difference between outward-facing rhetoric and reality; don't take China's policies at face value. A retired zoologist from the Chinese Academy of Sciences, he asked on first meeting me if I was a member of the Communist Party. I am not, and neither was he: his family had been branded rightists in the Maoist Era, some of them having fought with the Nationalists against the Communists during the Civil War. They were viciously attacked during various campaigns, including during the Cultural Revolution. He preferred not to watch the CCTV coverage that night, but listened to Chinese opera on the radio. When I asked him about climate change, he told me that the biggest threat to China's environment were the mouths of Chinese people. He said he meant the appetite for exotic wildlife in China, though I also suspected he referred the wider issues of rising meat consumption, competition between grain for animal feed, fuel and food, and I considered the fact that the Chinese word for "population" (人口 pron: *renkou*, literal translation: *people's mouths*) specifically refers to the mouth.

But, he continued, before I could really pursue this line of questioning: any worries about climate change were created by human impatience and hubris. Climate changes were natural and not caused by humans. The problem was that humans had no long view: an inability to perceive long cycles, a tendency to jump to immediate conclusions. Later I asked Xing about her father-in-law's climate-change "scepticism" (a term that I continue to use, despite some reservations, in this chapter as a shorthand for a number of positions of doubt about the scientific consensus on climate change). She told me it was a common enough opinion among Chinese scientists, including prominent academics who advocate action to curb carbon emissions. Their outward acceptance of the international consensus indicated they were responding to government contracts, she said. Many privately disagreed with the science: *neiwai youbie*.

Coming at the start of my fieldwork, I wondered what I should make of this. Had I encountered a type of cynicism? Žižek has defined cynicism as the "distance between the ideological mask and the social reality", where the "cynical subject" is quite

aware of that “particular interest hidden behind an ideological universality.” (Žižek 1989, 29) Climate change had seemed to be an issue of popular concern in the public sphere. But did this, in fact, reflect an ideological mask? Another kind of protective aversion tactic, like that employed when playing the edge ball? Watching the CCTV spectacular, Xing’s in-laws had derisively mentioned the CCTV fire exactly one year earlier. A New Year fireworks display at the hotel attached to the state broadcaster's new headquarters had engulfed that hotel in flames. CCTV didn't report the disaster, seemingly reflecting a sense of national and institutional embarrassment, a fact that the in-laws found darkly humorous. The Rem Koolhas-designed building had all been a colossal waste of money anyway, they said.

Sun Liping, a prominent sociologist at Tsinghua University, had written about this lack of mourning on the occasion of the CCTV fire, similarly concluding it reflected a distance between official ideology and social reality:

> “Sense of social identity and centripetal forces are rapidly lost. The big fire at a CCTV building on the day of the Lantern Festival caused several tens of billions damage, but there are only gloating voices over the disaster on the internet. No sadness, no grief. The morose delectation expresses an unspeakable pleasure. Some say this shows people's coldness; some say there is no hope for our nation; still some ask, why don't those who gloat think that part of their own property burned in the fire (because the CCTV building is state property)? … Where is the problem? It lies in whether we identify with the society... Behind those talks is psychological distance, that is, those things are ‘theirs,’ not ‘ours.’ Psychological distance is reflection of structural distance.” (Sun 2009)

Was there a parallel here between this sort of cynicism, reflecting, as Sun suggested, a lack of social, collective identification, in an ever more individualised Reform-Era China (cf. Yan 2010) and the sort of climate-change scepticism reflected in Xing’s father’s comment? Furthermore, was there really any political will at all at the centre? The suggestion about the CCTV fire was that the building was the sort of expensive, superficial bauble known in Chinese as *mianzi gongcheng* (面子工程 trans: *face project*) (Steinmuller 2011). Was the implication that the Chinese government’s use

of science here was also a “face project,” a protective aversion tactic in response to international pressure?

In this chapter, by exploring the climate scepticism that exists in China’s public sphere and in popular, media framings of climate change – in published reporting and in the narratives offered by reporters themselves of their adjustment to the rules of the game in climate-change reporting – I attempt to determine what this can tell us about Chinese journalists’ role in science and policy in contemporary society. To what extent is science perceived as political — and, not unimportantly —why does this question seem to matter? I find that the occurrence of scepticism does not reflect cynicism and individualism, so much as the complex space of the edge ball and a sophisticated sense among journalists that facts are context-dependent and shaped by power.

“The sinister intention of the developed countries”

Climate scepticism seems to be quite rare in China. Basic climate-change knowledge has been shown to be quite high among the Chinese public. In a national telephone survey of 4,169 Chinese adults, using a combined urban and rural sample, conducted by the China Center for Climate Change Communication (2012), 93% of respondents knew at least a little about climate change: 11% said they know a lot, 54% percent knew something, and 28% knew just a little about it. Only 7% had never heard of climate change. More significantly, 93% of the respondents thought that climate change was happening, with 55% saying that climate change was caused mostly by human activities and 38% saying that climate change was caused mostly by natural changes in the environment. Furthermore, 78% of respondents say they are either very (23%) or somewhat (55%) worried about climate change. Only 14% were not very worried and 8% were not at all worried.

More recently, a large-scale, quantitative study of public attitudes to climate change across Asia, conducted by BBC Media Action (2013), on which I worked as an early-stage consultant regarding media and climate change in China, suggested a high proportion (78%) of the Chinese public in Guangdong, Sichuan and Beijing thought that climate change was currently occurring. This also correlated with respondents’ exposure to TV and radio. These studies came on the tail of many similar climate-

change surveys, such as one commissioned by the BBC World Service (2007), which found that 87% of more than 1,000 Chinese respondents agreed that human activity, "including industry and transportation," was a significant cause of climate change.

Table 1. From BBC Media Action 2013 "Climate Asia" dataset. Question: Climate change refers to "a change in climate that persists for decades or longer". Do you think that climate change is happening? Variable: TV/radio exposure

	Total	High exposure	Low exposure	No exposure
Base: all respondents	5062	3613	1351	98
	%	%	%	%
Yes	78	77	81	61
No	7	7	7	22
Don't know/refused	15	16	12	16

However, where climate-change scepticism *is* seen to occur, it is a clearly a worldview that reflects some aspect of the social responses to climate change of interest in this dissertation — and, significantly – this chapter finds that this worldview does *not* necessarily correlate with an opposition to environmental policies.

In January 2010, international and Chinese news agencies reported that Xie Zhenhua, then China's top climate-change envoy, had said he was "keeping an open mind on whether global warming was man-made or the result of natural cycles." (Chamberlain 2010) Lü Xuedu, deputy director of China's National Climate Center, later defended this comment in the state media, claiming that at least 10% of the world's climate scientists do not believe in anthropogenic climate change. "Their views have pushed forward the progress of climatic science," Lü reportedly said. (China Daily 2010) Lü's first statement was probably erroneous. One US academic who tested a similar hypothesis found that of 928 abstracts published in peer-reviewed scientific journals between 1993 and 2003 and listed with the keywords "climate change", not one of the papers disagreed with the consensus position (Oreskes, 2004).

Around the same time, scepticism of the climate-change consensus started to appear in some Chinese media outlets, particularly in contributions from – or interviews with – Chinese climate-change-sceptic authors like Bai Haijun, author of *Carbon Empire* (Bai 2010), and Gou Hongyang, a market analyst, whose book *Low-carbon Plot* (Gou 2010) suggested that climate-change science was part of a western plot to contain China. An inversion of the popular belief among sceptics in rich countries that climate scientists comprise part of an elaborate hoax designed to undermine the sovereignty of the United States or other western countries as part of a "globalist conspiracy" (Lewandowsky, Oberauer and Gignac 2013), in this version of *neiwai youbie*-thinking (which reflected Xing's father's conviction that "humanity's actions" had been misinterpreted), Gou wrote:

> "Humanity's actions — industrialisation – is it really the primary source of carbon dioxide? It evidently is not. […] Behind the back of the demonising of 'carbon,' we must recognise that it is the sinister intention of the developed countries to attempt to use 'carbon' to block the living space of the developing countries." (Gou 2010, 7)

Significantly, these statements came in the aftermath of a number of controversies around the science of climate change, which led to the discussion of trust and scientific ethics across national borders. Beck has described such phenomena as events where the "political explosiveness of global risks is largely a function of their (re-) presentation in the mass media," since when "staged in the media, global risks can become 'cosmopolitan events'." (Beck 2010, 260)

Around a month before the UN-led climate negotiations of the Copenhagen conference, one such cosmopolitan event arose when a number of climate-sceptic blogs hosted a link to download thousands of documents and emails stolen by (to this day, unidentified) hackers from scientists at the Climatic Research Unit (CRU) at the University of East Anglia, a leading scientific institution in the United Kingdom. A number of bloggers almost immediately claimed that the emails revealed misconduct among the scientists, including the deliberate suppression, particularly in the peer-review process, of articles that questioned the consensus on anthropogenic interference in the climate system, as well as systematic manipulation of data in ways that would hide uncertainties associated with the consensus view. A few now

infamous lines from one of the many thousands of emails, written by the climate scientist and CRU head Phil Jones, read: "I've just completed Mike [Michael Mann, a US-based earth-systems scientist]'s *Nature* trick of adding in the real temps to each series for the last 20 years (ie from 1981 onwards) and from 1961 for Keith's to hide the decline." This was later described in a US Senate hearing as showing "deliberate efforts to massage data to fit a preconceived conclusion about climate change." However, the email referred to a decline in northern tree-rings — not global temperatures, as is often claimed — and is openly discussed in published papers and reports.

The suggestive name for the emerging scandal, "climategate", quickly circulated in the press, probably first coined by the influential rightwing English journalist and climate-sceptic blogger James Delingpole — and the allegations of scientific bad behaviour received widespread media coverage around the world as the Copenhagen climate conference approached. No less than six official inquiries were held in the wake of the scandal, none of which found evidence of personal wrongdoing or substantiated the main thrust of the sceptics' claims (Paasche 2010). However, at least one inquiry — by the UK Parliament's Science and Technology Committee — did criticise the scientists' routine refusal to share raw data with members of the public (Jasanoff, 2010b).

Media attention came to focus not only on the CRU but also on the Intergovernmental Panel on Climate Change (IPCC), the body that produces an updated assessment of peer-reviewed scientific research intended for use by policy-makers. Two of the IPCC's notable conclusions in what was then the latest report were: "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level." And: "Most of the observed increase in globally averaged temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations." Here "very likely" specifically denotes 90% or more certainty (a measure of confidence that has since been increased to 95%).

Shortly after COP15, it emerged that researchers for the IPCC had included in one report a projection that the Himalayan glaciers could disappear entirely by 2035. This

was not included in the final summary. It turned out the source for this claim was an article in the (crucially, non-peer-reviewed) magazine *New Scientist*, which cited a telephone interview with scientist Syed Hasnain, and was subsequently included in a study written by WWF, an environmental NGO. The IPCC later admitted that this prediction was not well established and the inclusion of non-peer-reviewed material, known as "grey literature," was mistaken. Sceptics cited the event as showing "alarmism", bias or the infiltration of environmentalists in the international body. Frequently presented together as "climategate" and "glaciergate," these two stories did seem to have some impact on public confidence in climate-change science, at least in the United States (cf. Leiserowitz et al, 2012). They also had an effect on discussions around peer review — with one more recent climate study, the Berkeley Earth Surface Temperature (BEST) project, moving its method of publication towards a kind of public "extended peer review." (Hulme 2011)

Barry has written about the ways in which the properties of materials — in particular, the metallurgical specifics of the coating of the Baku-Tbilisi-Ceyhan oil pipeline — can take on political significance, noting that this episode, focused on the environmental and social effects of a transnational oil pipeline in the Caucasus, pointed to the "preoccupation with formal procedures of accountability and transparency in political and economic life." (Barry 2010, 101) In a similar fashion, "climategate" and "glaciergate" brought attention to a public expectation of accountability from scientists and review processes that govern scientific knowledge practices, and similarly, this expectation came to focus on material proxies – in this case, tree rings, ice cores and more. As in the case of the pipeline, where Barry (2010, 101) noted that the "production of information about materials, as much as the production of information about labor relations or human rights, can in principle become a public political matter," the reaction to these cosmopolitan events also engaged their various participants — participants that blurred the boundaries between expert and non-expert, journalist, blogger and citizen, not to mention the fossil fuel and other lobbies that provided varying degrees of material and political support to the some actors in the melee — in a sort of material politics, seemingly at the expense of other forms of understanding climate change.

This type of material political engagement resonated with other phenomena in China,

such as the PM2.5 controversy that started in 2011 (see Chapter 3) — where an obscure scale of particulate matter took on an almost cult status. It not only sparked online discussions and proliferating forms of measurement, but even a rock music festival in Beijing named itself PM2.5. At the Communist Party's National People's Congress in 2013, one reporter shaved "PM2.5" into his head to suggest it would, or should, be the key talking point for that session (see Figure 11). Two years earlier, perhaps a more poignant material metaphor was employed by a blogger who had signed the Charter 08 petition, which called for democratic political reforms based on China's constitution. Drawing on the scandal, mentioned in Chapter 1, of children sickened with kidney stones by an additive that gave baby formula the artificial appearance of protein content, the blogger wrote: "We all grew up by feeding on 'political melamine.' Fear has been consolidated into stones in our bodies." (Cha 2009)

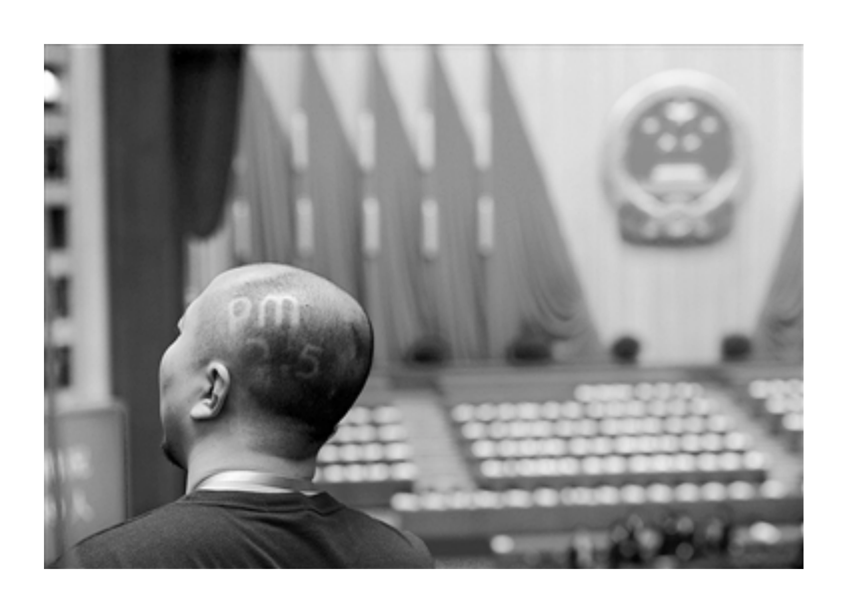


Figure 11: A reporter at the 2013 National People's Congress in Beijing.

Deficits and dogmas

The effect was that despite heads of government attending a global summit, where politically and economically significant agreements were expected to be signed, public attention had firmly come to bear on the specificities of proxy temperature records and their relationship to tree rings and other material phenomena, as well as the trustworthiness of those institutions that used this scientific knowledge to help guide policy. This was not an effect celebrated by members of the NGO or climate

policy community, yet the fixation served *inter alia* to expose the persistence of the deficit model among those dominant actors and institutions proposing action on climate change, characterised by the notion that the media were responsible for holding back political action through maintaining public mistrust of science: that the media were "responsible for public ignorance of both causes and consequences of climate change" (Smith 2005, 1473) and that better policy might emerge if media bias were addressed.

Media were seen to have been complicit in the *manufacture of doubt*: by reporting deliberate attempts to manipulate scientific uncertainties with regard to climate change, they had affected debates about climate change in the public sphere. This phenomenon, particularly in the United States, was impressively documented by Oreskes and Conway (2010), who examined how a milieu of ideologically driven US scientists had sought to systematically amplify doubts, not only about climate change, but also before that about the dangers of tobacco smoke, as well as DDT and acid rain. However, as Wynne has pointed out in response to Oreskes and Conway, the amplification of scientific doubt is only effective in rendering policy and its supporting science vulnerable when "scientific evidence is the only authority that can justify policy action." (Wynne 2010, 441) In other words, Oreskes and Conway were right to challenge the misleading narratives presented by think-tanks such as the George C Marshall Institute, an American conservative group with links to the oil industry, but one should also question *the scientism that underpinned their very effectiveness*: the notion that policy can be reduced to whether the science is right or wrong.

In the wake of "climategate," rather than mounting a critique of this scientism by embracing the political nature of the debate, many advocates of climate-change action instead directed their energies at the media and their coverage of inaccurate claims by "sceptics" and "deniers," inadvertently presenting themselves as the vanguard of scientism, rather than its opponents: one of the most paradigmatic examples being the banner held aloft by protestors in favour of climate-change regulation in the United Kingdom, brought attention to by Hulme (2009b), which claimed they were "armed only with peer-reviewed science." In the aftermath of "climategate" and "glaciergate," Hulme wrote, it was as though climate-change campaigners had

forgotten that they were “armed with much more: …a strong belief in the value of natural ecosystems, compelling ethical principles about the rights of the poor,” despite the fact that none “of this armoury was to be found in the peer-reviewed science they quoted.” (Hulme 2009b)

In summer 2007, attending a conference at the University of Oxford about climate-change reporting around the world, a veteran British environmental journalist, who had recently led a series of UK government-funded journalism-training sessions in China, discussed how he had instructed Chinese journalists in the craft of covering climate change, suggesting that where journalists might cover the impacts of individual weather events, such as the effects of droughts on local water resources and crops, they should be encouraged to link these local stories to the global effects of human-caused climate change. I queried whether he did not see it as difficult for Chinese journalists to keep the focus of their reporting on the science of climate change, when there were so many environmental problems in China that were unrelated to the climate – and when, in any case, no particular local event could be attributed to human-caused changes in the climate – and he replied that such local events must always be linked to the global, to the science of climate change, and that this was the essence of climate-change reporting, as he taught it.

This, and the persistence of the deficit model, for example, through the continued funding for numerous, similar climate-change journalism training programmes in China (Geall 2011a) suggested that his perspective was not uncommon. For many years, the British Council, supported by the UK government, organised climate-reporting training sessions in Beijing, Shanghai, Guangzhou, Chongqing and other cities. It set up an award for climate-change reporting; put online two training modules for media, an introduction to climate change and a guide to international negotiations; and sent journalists to the Copenhagen climate change conference. It also helped to found a web-based organisation, the Climate Change Journalists Club (CCJC), which organised field trips for journalists and produced the *Handbook on Reporting Climate Change*, published with the China Science and Technology Exchange Center, which is affiliated to China's Ministry of Science and Technology. The handbook combined information about the science, politics and diplomacy around climate change with suggested angles and methods for reporting the issue.

The China Science Reporting Network (CSRN) is another internationally supported professional organisation, founded with sponsorship from DuPont, an American chemical company, which has also supported environmental awards schemes in China as part of its corporate social responsibility portfolio. CSRN is an online platform for Chinese science reporters to communicate with scientists, academics and public information officials. According to its website, CSRN has organised online and offline activities to help encourage responsible science reporting. The website features a number of articles in Chinese exploring these issues in depth. A number of international fellowships exist for climate-change reporting. These include those organised by the Climate Change Media Partnership, co-organised by Internews, Panos and the International Institute for Environment and Development. This partnership provides an online roster of experts available for interviews on climate change topics. The Earth Journalism Network, founded by Internews Network and Internews Europe, organises fellowships for developing-world journalists to report from major environmental summits and has organised international awards for climate-change journalists.

Many Chinese newspapers, including at least one Beijing-based newspaper and one newspaper with a large Beijing office, also organise regular seminars or "salons" with environmental experts, both public events and "closed-door" sessions, for the benefit of their journalists' education on climate-change topics, as well as to establish the newspaper's credibility on these issues. One reporter described her newspaper's salons:

> "[Our newspaper] has a salon for journalists, experts and officials – and it is not open to journalists from other newspapers. The [experts and officials] can tell us some stories and it is helpful."

Domestic Chinese NGOs, many funded by international organisations, run a number of similar events, such as the Green Reporters' Salon, founded by Chinese environmental journalist Wang Yongchen, which runs monthly Beijing-based seminars on green topics, from climate justice to environmental anthropology and earthquakes, as well as excursions for journalists along rivers and canals around Beijing and longer reporting trips to rivers and dams in southwest China. The group has a long history of encouraging the development of Chinese environmental

journalists and green advocates. Many climate-change reporters I interviewed had attended such seminars and salons, some organised by their media organisations, some by international and domestic NGOs, some by foreign governments and related institutions. One reporter went to an internationally funded training course in Thailand. She said:

> "I joined a course in Thailand [organised by an international NGO]. It taught us how to train our colleagues. In this course, I communicated with many foreign environmental reporters and we shared our views. There were three or four reporters working for the BBC. At that time, I was writing a story about the IPCC – and the trainers and some of the reporters gave me suggestions."

Seminars and training sessions are key sites where environmental journalists interact and share experiences. Other venues include email lists and other online discussion groups for environmental journalists. A few of the participants belonged to professional organisations, such as the Chinese Environmental Journalists Association, but they were the minority. Journalists from outside Beijing also found a much smaller range of environmental educational activities available to them. Reporters from outside the capital could often cite seminars or talks that had happened in their area – usually organised by international environmental NGOs – but these were far less frequent.

Uncertainty and action

In the epistemology embodied by this senior journalism trainer and these many other climate-change training programmes, it is commonsensical to argue that scientific knowledge about climate change should be disseminated through the media. But the assumptions accompanying this imagine linear dynamics in the transmission of environmental information from scientist to citizen (which happens to mirror notions of linear dynamics in other fields, especially ecology) and the notion that incomplete knowledge – in particular, uncertainty – is reduced through scientific advancement, and is inimical to political action. This underplays the crucial role of framing and sustains a positivistic perspective that I argue accurately reflects neither science nor politics and ignores the descriptive and normative challenge of reconciling general and specific frames, as explored in Chapter 4.

Pielke Jr. noted (2012a, 204) that “appeals to certainty and control” that attempt to make ignorance disappear from sight “are typically grounded in invocations of science.” In the case of climate change, Sarewitz (2011, 476) characterised this position: “Science will lead to action by compelling a convergence of people’s worldviews around the need to take action.” This is despite the fact that disagreements are frequently rooted in ontology rather than epistemological disagreement or simple misunderstanding, and furthermore, that work by scholars like Jasanoff (2005), who explored civic epistemologies – how it is the informed citizens of different societies come to different judgements about scientific risks – has pointed to how “scientific facts bearing on the global environment never take root in a neutral interpretive field; they are dropped into contexts that have already been conditioned to produce distinctive cultural responses to scientific claims.” (Jasanoff 2010a, 240)

Consequently, a body of scholarship known as “post-normal science”, first proposed by Functowicz and Ravetz (1991) has suggested how “creative approaches to decision-making” can be found where “facts are uncertain, values are in dispute, stakes are high, and decisions urgent” even in cases of “incommensurable values”, and when ignorance “appears to overwhelm knowledge.” (Pielke Jr. 2012a, 196) A number of studies suggest that decisions can be taken in such circumstances and that, in fact, the admission of ignorance “opens up possibilities for political compromise and policies that proceed incrementally based on the feedback of practical experience” and that “agreement on facts as a prerequisite to action is not necessary.” (Pielke Jr. 2012a, 203)

One such example is arguably the Montreal Protocol on Substances that Deplete the Ozone Layer, the international treaty opened for signature in 1987, often regarded as a paradigmatic example of a successful environmental agreement, and one that is frequently cited by advocates of climate-change action (e.g. Doniger 2012). Pielke Jr (2012b) explained that rather than the conventional account – the science made certain, the public expressing a desire for action and an international protocol negotiated, political action that led to the invention of technological substitutes for chlorofluorocarbons – unified public opinion was not a factor that drove political action, and scientific uncertainty posed no obstacle to action either.

In 1974, almost immediately after Mario Molina and Sherwood Rowland published a

seminal paper in *Nature*, arguing that chlorofluorocarbons posed a threat to Earth's ozone layer, the US Congress had initiated hearings and the White House had established the Inadvertent Modification of the Stratosphere (IMOS) Task Force, which recommended that "the federal regulatory agencies initiate rulemaking procedures for implementing regulations to restrict fluorocarbon use." Crucially, Pielke Jr. argued that:

> "Policymakers had decided that action on the problem of ozone depletion could not wait until scientists reached consensus about the nature of the problem, its causes, and its future impacts. Decisions would have to be made in the face of uncertainties and ignorance – where even uncertainties were unknown." (Pielke Jr. 2012b)

Further, he explained than when the United States signed the Montreal Protocol, multiple analyses and polls of contemporary public opinion in the United States never demonstrated more than 50% of the population had a "serious concern" about the issue of ozone depletion. Significantly, there were very few news stories on ozone depletion in the United States, China, the United Kingdom and Soviet Union from 1977 to 1985, when much of the policy framework for the issue was developed (Pielke Jr. 2012b).

The research in this chapter supports the conclusions of this type of "post-normal" view of engagement with science, mainly because among journalists — and indeed among others — it was not uncommon to hear scepticism about the science of climate change expressed *alongside* the active promotion of environmental regulation and even "low-carbon development." For Chinese journalists, uncertainty did not seem to be a barrier to political action: while not a single Chinese environmental journalist I interviewed thought that the science of human-caused climate change was yet "settled", almost all of them thought that China had economic advantages to grasp in energy efficiency, clean technology and carbon trading – and that carbon emissions reduction could also produce environmental and health benefits.

As one reporter responded to my question about the certainty of the science of climate change:

> "No comment. But I think that we need to reduce the use of fossil fuels and carry out economic restructuring anyway".

This opinion came through strongly in many journalists' enthusiasm for low-carbon development topics, regardless of their views about climate-change science. For example, one editor said:

> "The climate-change issue is not just an argument between politicians: it's good for the boss whose company can reduce costs, and it helps every person to live a better lifestyle […] [A friend of mine] went to the United States, and was surprised that there is so often a blue sky – this is the other reason I report climate change: protecting the environment is good for your children and your parents."

Similarly, Dai Xingyi, an economist at Fudan University, who I watched address a large classroom of journalism trainees in 2011, explained that as a "mild sceptic about climate change" he was still fully supportive of "low-carbon development." As he expressed it, his skepticism was hardly mild, either: he suggested that climate change was part of natural cycles. He rhetorically referred to the warmer climate of that famous milestone of paleoanthropological discovery and occasional nationalist symbol, the *homo erectus* fossil "Peking Man". He said that warm weather could bring benefits for China and that even extreme weather like typhoons could bring benefits too. But his argument was further complicated by his insistence that problems in China's development were to be found in the government's focus on maintaining a high growth rate. Its consequences, he said, were great waste, growing inequality and corruption. By focusing on low-carbon development, *real* low carbon development, Dai stressed — since he was keen to differentiate between "pseudo" green projects, that is, "face projects," and effective ones — China could address social inequality, encourage innovation, help address energy security and more.

Similarly, during an interview about climate-change reporting, a journalist for a local newspaper playfully grabbed my audio recorder and held it close to her mouth, speaking quietly and quickly, as if confessing her sins:

> "I think the most urgent problem is not climate change but water pollution.

However, the media do not pay enough attention to those problems. It's POPs [persistent organic pollutants], heavy-metal pollution and air pollution that really kill people. But climate change is a political issue and it's about the face of the country – so I must try my best. But I object to the fact that every conference is talking about climate change – it's too much. Water pollution *and* climate change should both be noticed."

When asked about climate-change policies, she said her main interest in low-carbon development was how it could directly help China's vulnerable populations. She explained:

> "I hope in future the CDM [Clean Development Mechanism] will be able to help more poor areas. For example, I know it supports biomass generation in some areas, and in one case there is a company providing free solar power to peasants."

Balance and bias

Despite the focus on improving the accuracy of climate-change reporting in China, it seemed few people had asked how scientific controversies around climate change were understood and reported by Chinese journalists themselves. Scepticism in the media, I discovered, typically occurred in the context of "balanced" reporting. Many reporters expressed to me their commitment to journalistic "balance," describing this as the practice of laying out two, equally weighted sides of a controversial scientific story. Many journalists made clear to me they regarded this as a proven technique for quickly and effectively avoiding bias and presenting plural perspectives, especially when a reporter had little background knowledge about a particular subject. For example, one newspaper reporter said:

> "I don't discuss science in the newspaper, because I don't have enough scientific knowledge to make a judgement. I reported things like 'glaciergate' and 'climategate' and I remained neutral: I reported opinions from both sides and I was not partial to either side."

Another reporter from a state-owned newspaper had a similar view: balance was

necessary for reporters to maintain, he argued, even if they had reached a conclusion on the science:

> "Personally, I believe in climate change and it is related to everyone, so I pay attention to people who believe it, and most of my information sources are scientists who believe in climate change. But we also should pay attention to those who don't believe it – to maintain balance."

"Balance" is a latter-day echo of the "Fairness Doctrine" established with the rise of television in the United States in 1949, which required broadcasters to dedicate equal airtime to "both sides" of a controversial issue, and is still a common way of framing stories in the Euro-American context (Oreskes and Conway 2010, 19). In fact, many informants cited balance alongside "objectivity" as something admirable that was shamefully lacking in many Chinese media reports — reflecting the values of Hassid's type-one journalist (Hassid 2011). One journalist said:

> "[I use] research reports and papers from national and international scientists. I don't believe domestic [Chinese] news reports, and prefer to seek the original source of the information, because some domestic media neglect objectivity and balance in reporting in order to attract people's attention."

As in the comment above, balance as a counter to sensationalism was a common theme. It was described as an aspect of "professional" reporting by one journalist who reported about an intercessional UNFCCC climate negotiation in Germany:

> "People were not concerned about what happened in Bonn, but it attracted professional readers and the IPCC considered it a successful report, because it was balanced on two sides. It was professional and we put some investigation into the stories."

Balance was thus a technique employed by writers to improve reporting by maintaining plural framings where they might be traditionally uncommon in less "professional" reports. However, in the context of the climate-change communications literature, the "balance" approach has been widely criticised as a form of bias in itself (Boykoff and Boykoff 2004), in particular, an "informational

bias” that can distort the scientific debate to make it appear polarised and controversial, when in fact the scientific consensus is more conclusive. Oreskes and Conway put it this way:

> “In an active scientific debate, there can be many sides. But once a scientific issue is closed, there’s only one ‘side.’ Imagine providing ‘balance’ to the issue of whether the Earth orbits around the Sun, whether continents move, or whether DNA carries genetic information. These matters were long ago settled in scientists’ minds.” (Oreskes and Conway 2010, 214)

In 2004, Oreskes showed in a study that scientists had already reached a consensus about human-caused climate change by the mid-1990s (Oreskes 2004). The same year, Boykoff and Boykoff (2004) analysed media articles from 1988 to 2002 and found that in the US press, “balanced” articles – which dedicated the same amount of space to the majority view among climate scientists as to deniers – had nevertheless comprised 53% of the total.

If this “balanced” perspective so poorly reflects the scientific consensus on climate change, why did there seem to be such a preponderance of this particular norm in China? Was this just a type of path dependency in the teaching of journalism? Did it reflect skepticism, or cynicism? Or did it reflect an educational deficit: were journalists still ill equipped to understand climate change? Reporters frequently described their use of balance as stemming from an educational deficit, but further investigation revealed Chinese journalists’ lack of scientific sources typically reflected the information environment and political climate in which they worked – and a clear sense of disempowerment.

A common theme among many journalists’ initial narratives of themselves was their lack of scientific education. Most had studied journalism or disciplines in the humanities, such as sociology or philosophy. One said:

> “Many journalists like me don't have a scientific background, so we can only get information from scientists, NGOs and the government. I think our biggest obstacle is that we don't have good training on climate-change issues and scientific topics.”

This sentiment was repeated frequently. Another, related opinion was that science-reporting training did not necessarily include environmental topics. One said:

> "There are few professional environmental reporters in China. Most environmental reporters are science reporters."

One local newspaper reporter not only traced this problem to reporters' backgrounds, but also said that Chinese science was itself undeveloped, reflecting perhaps an embedded sense of the "global hierarchy of value" (Herzfeld 2004), saying:

> "In China, environmental science has only started in recent years, so the scientific discussions and research among Chinese scientists are limited – and still lagging behind western countries."

However, many climate-change journalists to whom I spoke had never interviewed scientists, nor used them as background sources. Journalists also made few distinctions between different groups of scientists and their specialised knowledges, often giving the impression that the experts represented an undifferentiated group. One reporter said: "I have not interviewed any scientists," though she explained that she had interviewed professors – from other, non-scientific disciplines – about climate-change topics. Asked how she developed those contacts, the reporter said that her media organisation kept a database of relevant contacts, but she had no personal contacts for background on either scientific or non-scientific topics. She said:

> "I don't do this work [building relationships with contacts]. We have staff working on this, and they organise all the information and the people we contact – just like a file."

This was less a reflection of journalists' lack of interest in scientific work, but of the limits on Chinese climate-change reporters' access to information. While scientists were difficult to approach for the sort of deep, background information that could help to shape scientific reporting, officials were even more difficult to use as sources. One reporter said that the most important officials in China's climate-change policy-making were the most difficult to approach, saying:

> "Officials from the National Development and Reform Commission – the

> most important force in climate-change policy in China – are the most difficult to interview."

Many felt that the lack of official transparency was the greatest obstacle facing climate-change reporting in China. One journalist said:

> "Information is not transparent enough. The government contacts the media only when the government needs to express something in the media, but the government rarely grants interview requests and officials often just speak in official language."

At the Copenhagen climate-change conference, some reporters found it was "difficult to stop the officials":

> "When [lead negotiator] Xie Zhenhua was walking to the press room, I stopped him, but I couldn't get satisfying answers. I tried a couple of times to stop [negotiator] Su Wei, but I couldn't get much information from him either."

Hidden faces

For investigative and watchdog journalists in China, such secrecy was a reason to push into the edge ball space in reporting, to expose the hidden "face" where the inside and outside differ. In discussing climate-change controversy, Beck noted that the "presentation and visualization of manufactured risk makes the invisible visible." (Beck 2010, 260) Meng Dengke, reporting about the waste incineration industry for *Southern Weekend,* was explicit about his distrust of a group of scientists involved in promoting incineration projects, and his desire to expose invisible aspects of a perceived scientific consensus.

One of Meng's articles centred on an obscure-sounding meeting in Guangzhou, southern China, in March 2009 called the "7th Solid Waste Advanced Salon". The "salon" concerned rubbish incinerators, which are often described as a source of "green" energy. These have received carbon credits and have also been supported under the 12th Five Year Plan, but are often sited in urban neighbourhoods and have been opposed by residents for health and environmental reasons across China. For

example, since 2010, Nantong resident Xie Yong has been battling the environmental authorities for access to emissions data that might provide evidence of a link between his son's cerebral palsy and toxic pollutants, including dioxins, from a nearby waste-to-energy plant. He believes that he lives in a cluster of such cases, and he is being supported in his quest by the Center for Legal Assistance for Pollution Victims (Balkan 2012). In Meng's article for *Southern Weekend* (Meng 2009), the links between the waste-burning industry and the pro-incineration experts who had secured government support for such schemes came under scrutiny.

At the salon, Meng wrote, the invited academics simply showed contempt for public concerns. The industry experts claimed that "the public are ignorant and obstructionist" and that "the government should make full use of the legal system to put an end to local disruptions in the interests of the wider good, if necessary relocating residents rather than the incinerators." It caused uproar: Meng suggested that while this appeared to be an academic meeting, it was in fact a one-sided industry-lobbying event. Claims were made that such plants posed little danger to local communities, but Meng had found that despite its presentation as "an academic meeting", "the views expressed were one-sided, with a distinct lack of dissenting voices." There was a lack of balance – and a stealthy link to policy, too:

> "Just five days later, Beijing released plans for more incinerators ... 'It shows their power to influence policy,' said one environmentalist. 'And that's the reason the incineration firms flock around the experts.'" (Meng 2009)

Meng told me later in a recorded interview, which was broadcast on the popular Chinese website and instant messaging service QQ.com, that there were many protests about incineration in China. But, he said:

> "Due to media controls, we cannot write reports in certain areas. We wanted to find another angle to write about waste incineration, therefore we opted for these experts. Why did we choose them? The reason was a public consulting conference hosted by the Guangzhou government, to which all the experts were invited. They are the 'incinerationists' mentioned in my article. After collecting more information, we found that those experts had many titles and roles... We wanted to find out their true face, the one hidden behind their

> 'expert' identity."

Meng said he based his investigation on the approach taken by earlier Chinese reports on the role of "experts, lobbyists and businessmen" in promoting genetically modified crops in China. His quest was to find the hidden face behind, or inside, the expert exterior. Returning to Beck's theme, the space of ecopolitics had helped Meng, as a journalist, to test the limits of visibility with regard to power, knowledge and interests in society. The lack of trust, contact and engagement with scientists and officials may help to explain the reliance of "false balance" in scientific reporting around climate change. After all, if a journalist is given little opportunity to corroborate or reason to trust the scant information they can obtain, is it not wiser to simply present the "sides" of a story, leaving the plural frames open to public engagement, dialogue or debate?

"A game between politics and science"

Thus, it seemed that the practices of climate-change journalists reflected neither cynicism nor an educational deficit, but the continued use of balance in a context of political disempowerment and a sense of the entanglement of facts and interests. In fact, what is perhaps unusual about Chinese journalists reporting the climate is not the degree of scepticism about the science, but the extent to which journalists' efforts to map controversies and practice radical interpretation had resisted scientistic capture — and the extent to which scientific debates had been interpreted in political terms.

Many journalists I interviewed in Beijing said they found "climategate" and "glaciergate" two stories that were newsworthy, precisely because they pointed to the underlying politics – and "interests" – of what appeared a fact-driven debate. In other words, many journalists' engagements with this scientific debate were shaped by a sophisticated notion of *neiwai youbie* — that material engagements were the outward face of political contention.

One reporter for a prominent local newspaper described this to me, using the metaphor of the game:

> "We view it as a game between politics and science — of course, including economics — and it is already not only a science issue, but beyond the science

> boundary… The IPCC made several mistakes, such as 'climategate' and 'glaciergate'. It was comprehensive and you should put all the scandals together and find out what is behind the scandals, rather than writing about the scandal itself."

Li Hujun, then writing for Caixin, told me in an interview that climate-change journalists in China should not only learn the "key scientific evidence and facts of climate change," but also what he called, tellingly, the "'rules of the game' in the scientific community, such as peer-review publication." He continued:

> "Climate change is not only a scientific issue. It has strong connection with politics, business and so on. Therefore, it is helpful if a journalist not only learns to digest the scientific jargon, but also learns about the interest conflicts among stakeholders."

Here, Li implied that interests inevitably shape scientific knowledge: a comment that linked the ontological disputes in the last chapter to the more epistemologically focused contentions described in this chapter. In Green's work on the Balkans, set on the Greek-Albanian border, the history of Stalinist approaches to truth meant that actors commonly understood the political as performative of reality. Green described how official statistics were thus commonly understood as "only part of the story; they could be properly understood only through the addition of a lot of other (nonstatistical) ways of representing how things were, which were embedded within the statistical accounts." (Green 2005, 166) Importantly, Green's interlocutors explained to her what should and should not be believed, in part through gauging what *her* interests were: "One kind of account would do for one kind of interest." (Green 2005, 166) Green described how conversations about numbers, even with officials, involved identifying the "motivation underlying the desire for 'facts' or representing 'facts' in one way rather than another." (Green 2005, 168)

Therefore, facts were understood as context-dependent realities, shaped by power. This resonates with Chinese climate-change journalists' understandings of power and knowledge. As Green put it:

> "It was also accepted that that such 'entangled facts' could become 'genuine

> facts' in practical terms, because political organisations often acted upon them as if they were 'genuine facts,' even if they were aware they had been 'moulded.'" (Green 2005, 168)

Significantly, in the conversation with Li, he defended the role of climate-change journalists in society, not as linear purveyors of certainty, whose approach to knowledge could be perfected, but as actors in society with plural motivations, values and interests that affected *their* approach to knowledge, which also needed to be balanced.

> "I went to a workshop before the United Nations Climate Change Conference in Tianjin, China, and an NGO representative said that media should also join NGOs to be a part of the climate campaign. As a journalist, I couldn't agree with her. There is no doubt that media can actively urge both policy-makers and the general public to act. However, we journalists first need to be objective when we cover stories. Definitely a media organisation is not an NGO, each has its own role to play."

These perspectives – that facts and interests are necessarily entangled, even where power might have forced framings that exclude an understanding of multiple truths – might help to explain the roots and resonances of bias and balance in the Chinese context. It could help to explain the extent to which epistemological debates were understood to have a deeper, context-dependent basis in an actor's position, interests and values, an understanding that also underlay my neighbour's quiet comment to me at the start of Chapter 1: that discussions around carbon trading were about profit, not the environment. It also helps to explain a conversation I had with a Chinese environmental activist about the same organisation that hosted the seminar.

The British Council, said one activist, had chosen throughout its climate-change journalism training sessions to frame the Kyoto Protocol as if it would end in 2012. According to other perspectives, she said, it should be seen as being due for renewal, for a new phase of the treaty. The British Council had implied an end in order to prefigure a new treaty, one in which rich countries could pass the burden of climate action onto China and other developing nations. For many actors like her – and the climate-change journalists who had told her about this element of the training –

framing mattered: it created realities.

Conclusion

This chapter set out to show how in China in 2010 the reporting of science, and two superficially empirical controversies in particular, expanded a political and cultural debate. Journalists' engagement with such questions underscored their status as "issue entrepreneurs" engaged in shaping messages in the public sphere, often with the intention of making the invisible more visible for citizens and influencing government policies that affect citizens.

Chinese journalists are seen to be dynamic agents, affected and sometimes sharply limited by political and social realities. Journalists shape and reshape a circuitry of messages about climate change (Carvalho and Burgess 2005), which is defined by journalists' social context, interests, changing sets of values, and their differing relationships with editors, climate-change communicators, NGOs, scientists, officials and non-human objects, from tree rings to ice cores. Significantly, within this network of relationships, many Chinese journalists feel themselves to be in a disadvantaged position *vis-a-vis* scientists.

Many felt they have reason not to trust scientists or that they are ill-equipped to interpret scientists' knowledge – an expression of an educational deficit that was often entangled with political disempowerment. As a result, many employed the concept of "balance" as a journalistic device to avoid judgement on competing claims around climate change — a strategy that might produce an informational bias, but has also been overstated in terms of its potential impact on policy, since I found that the scientific certainty frame is not a prerequisite for political action. In fact, scepticism is seen to coexist with environmentalist leanings. This points to the extent to which uncertainty can be negotiated, and can even serve a starting point for politics, rather than an impediment. In the next chapter I will look at how issue entrepreneurs engage science when it has been explicitly politicised on a global scale, in the framework of the United Nations.

Chapter 6: Politics

In October 2010, in Tianjin, north-east China, at an intercessional meeting of the UNFCCC, the United Nations climate negotiations, a veteran Chinese environmental journalist was feeling overwhelmed by the talks and somewhat put off by the obfuscatory, technocratic jargon that characterised them. The day was polluted and hazy, but he walked out of the vast convention centre and wandered the surrounding streets to see what the city's neighbourhoods could offer him by way of respite. There, he stopped by a car park, sat and watched as some local residents played an impromptu game of tennis.

Later, he came back to the conference and asked me to explain the politics of the talks that week. As best I could, I tried to outline the central conflict between China and the United States that had unfolded through those frustrating, complicated few days. At its heart, I said, the problem was about how the two powers might formalise and internationalise their domestic pledges on reducing greenhouse-gas emissions and on the part these commitments would play in a future, legally binding treaty. China had quite ambitious low-carbon policies, I said. But the prospects for climate-change legislation in the United States were in disarray, thanks to its gridlocked democratic process. It was understandable that other countries might lack confidence that the US was serious about implementing its targets, even if the President put them on the table, yet the US continued to adopt an aggressive posture in negotiations.

He listened, and then he described to me the tennis match he had watched, explaining that the space in the car park was so small that the tennis players had to serve and volley very gently, for fear of hitting the ball into the busy road. The cramped space of the car park could represent the limited time of the negotiations, he said — before climatic tipping points, before the treaty teetered into irrelevance. The aggressive American playing style at the negotiations had lost the ball, knocking it out into the road. They didn’t have a feel for the game.

This chapter discusses the experiences of Chinese environmental reporters before and during this UNFCCC meeting in order to explore and analyse climate-change reporting in contemporary China and how it relates to the politics of climate change. In the previous chapter, I discussed how scientific controversies around climate

change were understood by Chinese journalists and how these reporters tried to make the hidden political face of scientific controversies visible, problematising a view of science communication that sees knowledge and certainty about climate change being communicated in a linear fashion from scientist to citizen. In contrast to the previous chapter, here it is not only the language and discourse of science, but also of diplomatic procedure and technocracy – that is, the expert-led application of scientific advice to multilateral environmental treaty-making, held in a highly closed environment – that challenged the Chinese journalist to make visible the invisible, obscure or literally "bracketed" in climate change.

In this context, Chinese journalists found themselves struggling to locate their voice as they were pulled between a number of contradictory, boundary-cutting forces in the reporting of one such politically explosive "cosmopolitan event" staged in the media: the negotiations towards a new global treaty on climate change. This chapter problematises a notion of media that sees climate-change governance as being unambiguously understood and communicated as either a national project or an international political dispute. Reporting environmental issues presents Chinese journalists with a series of choices about whether to speak on behalf of the beyond-national space of ecopolitics, or maintain loyalty to a Chinese government-led truth – and engaging in media-staged combat with developed nations. The complex ways that journalists face these contradictions, the recurring notion of "responsibility" in the framing of these choices – and the process of learning a "feel for the game" in negotiating them and finding the "edge ball" space – point tellingly to the contours of the public sphere in today's China.

The difficulty of even obtaining access to the Tianjin conference underscored the real limits on access to information faced by Chinese climate-change reporters – let alone activists or concerned citizens. In a Kafkaesque and drawn-out process, I began registering for the Tianjin conference, formally known as the AWG-KP14/LCA12 of the UNFCCC. I would certainly not have been able to obtain this registration as an ethnographic observer. My options were limited to membership of a formally registered advocacy organisation (an "NGO observer" to the UNFCCC) or a member of the press, which suited me better in terms of access, since it entitled me to enter press conferences with Chinese journalists — a privilege not afforded to NGO

observers or negotiators. I asked a favour of an editor at the Washington D.C.-based *Foreign Policy* magazine, if I could attend as their correspondent. Following the strict instructions set out by the UNFCCC press office, I sent a scan of my passport, a PIN code and a letter of accreditation from *Foreign Policy.* I was also supposed to send a scan of a press card, but since the United Kingdom does not have a system of journalist registration, I was not able to provide one. The email reply came:

> "The letter of assignment must be on letterhead and be addressed to the UNFCCC Press Office. It must be signed by an authorized official (e.g., the Publisher, Assignment Editor or Bureau Chief), of the media organization seeking accreditation. Unsigned letters or e-mails will not be accepted.
>
> As you are a new applicant and don't have a press card, please submit two bylined articles within the past four months and a copy of the publication. Work samples must demonstrate active engagement in covering the activities of the United Nations, and specifically the climate change process. Samples must be unaltered clippings or media products of the bona fide organization with bylines of the individual requesting accreditation.
>
> Regards,
>
> UNFCCC Press Office"

A further two rounds of emails ensued, in which I provided evidence of having written about climate change and the UN (although the requirement that one show prior "active engagement in covering the activities of the United Nations, and specifically the climate change process" meant that it was, strictly speaking, impossible to ever become a reporter at the UN in the first place). I was also asked to send physical copies of the (largely web-based) publication and signed versions of the original letter, instructions with which I complied. This process, one that I imagine that anyone but the most assiduous, well-connected and tireless would find difficult to complete, eventually gave me permission to obtain the necessary credentials to enter

the Tianjin Meijiang Convention and Exhibition Centre, where the UN meeting was taking place, though most of the negotiations would nonetheless still be out of bounds to all reporters.

I had lived in Tianjin in 2003 for almost a year studying Chinese language. At the time, the journey from Beijing took around two hours. Now, the high-speed train would take little more than half an hour, speeding through a dusty, hazy and increasingly urbanised landscape that suggested Tianjin was fast headed towards becoming part of a "polycentric megacity" with Beijing (Dong and Kong 2011). The air pollution that day I arrived, and throughout the week of the talks, was thick and pervasive. On arriving by taxi at a hotel, which a Chinese colleague had booked for me weeks earlier, I was informed that foreigners could not stay there. It was a standard, low-budget chain and such an exclusion was by no means customary — I have stayed at the same chain on other occasions. The apparent explanation – "It's a national holiday" – didn't make any sense either. During the UN talks, it transpired, only certain hotels in Tianjin had been licensed by the government to house foreign guests. Eventually, I found lodging in a room booked by a Chinese NGO activist in another budget hotel, which didn't seem aware of the regulations barring foreigners. The arbitrary rules and red lines, the closed doors and the pervasive sense of frustration, as it later proved, was a harbinger of the week ahead.

(Post) Kyoto narratives

It is clear that across the world, there has been an impressive institutional consolidation of environmental and sustainable development discourses. As Castells (2004, 168) has described it, "If we are to appraise social movements by their historical productivity, namely, by their impact on cultural values and society's institutions, the environmental movement has earned a distinctive place in the landscape of human adventure." The space this institutionalised discourse occupies, which Kuelhs (1996, 25) called "the space of ecopolitics" is at its heart international, since its topology challenges the borders of nation-states, as "it slices effortlessly from one state to another, in the form of acid rain, chlorofluorocarbons (CFCs), radioactive fallout, polluted waterways, and so on." The resulting transnational institutionalisation of ecopolitics and sustainable development has indeed led to some notable environmental breakthroughs, such as the UN's Montreal Protocol, restricting

the production of ozone-depleting gases, discussed in Chapter 5.

Still, the difficulty of implementing global environmental governance has not been overcome in many cases. As Brundtland lamented, “The Earth is one, but the world is not.” (WCED 1987, 27). This particular anxiety was introduced and discussed in Chapter 4, with reference to attempts to shift popular discourses and understanding of weather and climate events, and shaped the previous chapter with regard to attitudes towards scientific controversy. In the case of climate change politics, the major forum for such transnational institutionalisation and the quest towards a global consensus has been the United Nations Framework Convention on Climate Change (UNFCCC), adopted at the United Nations Conference on Environment and Development in Rio de Janeiro, Brazil, in 1992. Five years later, in December 1997, the Kyoto Protocol — the first attempt at a legally binding instrument to curb the greenhouse-gas emissions of developed nations — was signed by almost every state in the world (including China and the United States, although the latter failed to ratify the treaty).

According to the dominant narrative, what was now happening at the Tianjin UNFCCC talks? As outlined in previous chapters, in late December 2009, Copenhagen had played host to the UNFCCC conference known as the 15th Conference of the Parties, or COP15. After two weeks of difficult, heated talks involving negotiators and (unusually) heads of state, including the then Chinese Premier Wen Jiabao, 188 countries had reached a limited agreement, known as the Copenhagen Accord, to continue global efforts to reduce greenhouse-gas emissions. That agreement restated many of the goals of the Bali Action Plan, agreed at COP13 in 2007, and recognised that average global temperatures should not rise more than two degrees Celsius above pre-industrial levels. But it fell short of a legally binding deal for the post-2012 era, which many supporters of global political action on climate change had hoped for. The UN talks in Tianjin were the last before the 16th Conference of the Parties (COP16) in Cancun, Mexico, and the first such meeting to take place in China. Thus, with the expiry of the first commitment period of the Kyoto Protocol approaching in December 2012, this temporal dimension had created a sense of political urgency.

Prior to the Copenhagen conference, the Chinese government had announced a domestically binding target to reduce the carbon intensity of the economy by 40% to

45% by 2020 compared to 2005 levels. However, a major sticking point in the negotiations became how to monitor such emissions "actions" (as distinct from developed countries' internationally binding commitments) from developing countries as part of a future agreement. Typical of the jargon surrounding the UN negotiations – and the tendency in this field of governance for particular materials or technologies to synecdochically refer to complex political disputes, this issue is generally referred to by its acronym, MRV: measurement, reporting and verification. China's role in the talks and their outcome – including the country's perceived standoff with the United States and other developed countries, and its strategic relationship with India and other "emerging economies" in the developing world – became a controversial element of the media narrative that emerged, in China and the rest of the world.

During the Copenhagen conference, the official Communist Party newspaper *People's Daily* had published only limited coverage, mainly drily covering senior Chinese leaders' meetings with western diplomats. However, in terms of framing the theme and tone, the "majority of coverage at the start of the conference concentrated on positioning China as a developing nation with a strong focus on the concept of 'common but differentiated responsibility' [CBDR]." (Painter 2010, 46) The CBDR discourse is a cornerstone of the Kyoto Protocol, but was first codified in the institutionalised arena of sustainability at the Rio Earth Summit in 1992. Principle 7 of the Rio Declaration states:

> "In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command." (Principle 7, Rio Declaration on Environment and Development, 1992)

In the context of the Copenhagen talks, this focus on the CBDR frame meant that in discussions of emissions reduction targets and financial commitments of the developed world, "media coverage positioned China as a developing nation and as a champion of the G-77 [developing countries] agenda." However, in light of the outcome, state media accounts shifted frame: "coverage switched to include Chinese

leaders meeting with Indian, UK and German counterparts, thus positioning it as a *responsible* world power." (Painter 2010, 46, emphasis mine). The word "responsible" here embodied a productive contradiction in the term, and a pull between international and national constituencies. In the immediate aftermath of the Copenhagen conference, a number of state media articles analysed why the talks had apparently failed, generally blaming the breakdown on western countries' unwillingness to cooperate or share technological information, or on the "growing divide" between developed and developing countries at the talks (European Council on Foreign Relations 2010).

However, most Chinese state-media reporting, drawing on a powerful, discursive dichotomy between western and Chinese narratives, soon started to take a strong defensive line about its leaders' role at Copenhagen. Two widely read articles in the British newspaper *The Guardian* – one by then UK climate secretary Ed Miliband and the other by the journalist and environmentalist Mark Lynas – were seen as having accused China and its allies of "hijacking" the conference to prevent a substantive deal being made. Lynas had written:

> "The truth is this: China wrecked the talks, intentionally humiliated Barack Obama, and insisted on an awful 'deal' so western leaders would walk away carrying the blame. How do I know this? Because I was in the room and saw it happen." (Lynas 2009)

In a direct response, state news agency Xinhua reported that: "China showed the greatest sincerity, tried its best and played a constructive role" at Copenhagen. Many Chinese articles then asserted that Copenhagen had not been a failure at all, citing apparent successes, such as commitments from developed countries on financial assistance. A series of articles in the state media tried to put the record straight regarding various allegations that emerged, particularly that the Chinese premier had "snubbed" the US president during last-minute talks intended to save the deal. The *China Daily* journalist Fu Jing described this series approvingly as an attempt "to correct the distorted image that had been created by the Western media." (Fu 2011, 19) The resulting series was unusually detailed and linked these details to principles of openness and international "endorsement":

> "Something unexpected however happened during the dinner. A foreign leader mentioned to Premier Wen inadvertently that a certain country would call a small-group leaders' meeting following the dinner to discuss a new text. This caught Premier Wen's attention, because the list of invited countries held by this leader had the name China on it, yet the Chinese side had never received any notification about this meeting. Premier Wen then sought confirmation with some other leaders, who told him that indeed such a meeting was scheduled after the dinner. It was really absurd that the country who called for the meeting never informed China.
>
> […]
>
> "Upon Premier Wen's instruction, Vice Foreign Minister He rushed to the venue of the small-group meeting and raised serious concerns with the host for arranging such a meeting with hidden motives. He stressed that the principle of openness and transparency must be respected. No one should try to form small circles or force decisions upon others, or they would risk leading the conference to failure.
>
> [...]
>
> "The fair and reasonable principles outlined by Premier Wen represented the shared aspiration of developing countries. They were both realistic and forward-looking, and had taken into account the interests of all parties. They pointed the way forward at a decisive moment of the conference, gave a strong push to the efforts to safeguard and advance the negotiation process, and therefore received widespread endorsement." (Xinhua 2009)

This piece, like others before and during Copenhagen, served to dramatise and personalise world leaders' interactions and engagements. Fu wrote his own account of the moment:

> "In the days leading up to his flight to Copenhagen, Premier Wen Jiabao has been on a marathon run of telephone diplomacy with major global leaders, a key indicator that the nation is vigorously pushing for a climate change treaty at the

United Nations conference." (Fu and Cheng 2009)

The potency of this particular image comes from the way it plays simultaneously to national and international audiences and thus straddles frames. On the domestic front, the implication of the telephone diplomacy is that the leader has swooped in to impose discipline on an uncertain situation, imbuing him with the power of verticality, echoing the dynamics described in Chapter 2 and explored theoretically by Ferguson and Gupta (2002). Thus it points to how with climate change, as much as with other environmental issues, the government saw a need to "guide public opinion" (see Chapter 3) through state media reporting of the central government's role in this environmental issue.

In another climate-related event concurrent with the Copenhagen conference, from late 2009 through early 2010, the worst drought in a century affected more than 50 million people across southwest China. Rivers shrunk to between 30% and 80% of their usual volume and some dried up completely. Yunnan province was hit the hardest, with the drought reportedly affecting 85% of the province's land. Concerns about the impacts on food security and hydroelectric output prompted Premier Wen to tour the region three times in early 2010 and urge local authorities to make drought relief their top priority. Photographs of Wen, crouched on dry riverbeds, inspecting the harvest or helping to plant seedlings, appeared on national newspaper front-pages. On one occasion the headlines focused on Wen's polite refusal of a cup of tea from villagers in Yunnan province, as not to put undue strain on water resources. Wen's intervention in Yunnan thus encompassed citizens and lower-ranking officials in their local area, imbuing him with the associations of great power, vision and surveillance that come with verticality.



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小区路变市政路？

祈福新邨贴出相关规划公示、引起众业主哗然 A II 01

总理婉拒村民茶水

温家宝考察云南旱区称运水不容易，并说绝不让民众没水喝

A03/A04

二十考生争一职位

A06

地铁三号线车厢加长一倍

4月28日起，三节车厢增至六节车厢，高峰段行车间隔从2分51秒变成4分30秒 A06

广州月底启动生活垃圾分类

A10

Figure 12: Accompanying a photograph of Premier Wen Jiabao in drought stricken Yunnan, the Guangdong-based newspaper Xin Kuai Bao (New Express)*, March 22, 2010, has the headline: "The Premier politely refuses a farmer's cup of tea"*

On the domestic level, Wen's telephone diplomacy was analogous, except that in rising above international pressure in the multilateral arena, Wen could even be seen to operate effectively as a leader at the planetary, environmental level, even outside of the nation state. On the international level, this dramatic, individualised focus also played into the rising influence of celebrities and the "spectacle-ization" of the cultural politics of climate change. Boykoff and Goodman (2009) have proposed the "Cultural Circuits of Climate Change Celebrities" as a model for analysing the "confluences of science, celebrities, and politics." Defining celebrities as "those whose activities are more prominent and agency more amplified than the general population", Boykoff and Goodman argued that the rise of both "celebrity *politicians"* (political figures who have reached celebrity status) and "*celebrity*

politicians" (other types of celebrities, who comment on political and politicised issues) has had a significant impact on the cultural politics of climate change, underscoring, *inter alia*, a rising individualist discourse of the celebrity as "heroic individual" seeking "conspicuous redemption" through their participation in international ecopolitics (Boykoff and Goodman, 2009).

One Chinese business newspaper reporter told me with a wry smile that another newspaper had featured the popular Chinese film actress Li Bingbing as a celebrity correspondent at Copenhagen. The website of the Danish Ministry of Foreign Affairs quoted Li as saying:

> "I came to Copenhagen in order to help the world understand what we Chinese have done in environmental protection. I would like to do my part and fulfil my social *responsibilities*. I hope through my work, more and more people will join us." (Danish Ministry of Foreign Affairs 2009. Emphasis mine. Text now removed from government website.)

This formulation implied a form of embodied eco-governmentality: Li's "responsible" lifestyle could act as a model for the regulation of individual behaviour and suggested the link between that positive behaviour, the responsibility of China on the world media-stage and the CBDR discourse. Importantly, like the idealisation of Wen as the telephone diplomat, such images used dramatic and moralised tales about high-profile individuals to supplant more concrete, collective discussions about the politics of climate change.

Understanding the dynamics of Chinese state media in their interactions with western media also tells us a lot about the role of the media in climate-change governance, and the extent to which its frames have been driven by a backlash against a perceived "global hierarchy of value" (Herzfeld 2004). The flare-up replays a number of previous polarised battles over the representation of China, conceived monolithically as a battle between the framings of "western" and "Chinese" media. Rosen, for example, reflected on the link between this pervasive discourse and the ideological turn away from internationalism among contemporary Chinese youth:

> "For youth today, the unabashed, uncritical internationalism of the late 1980s

has been replaced by what [Zhou Yongming] has called a new interpretive framework that acknowledges the pursuit of national interest as the ultimate goal of international relations. Within such a 'reception context,' information emanating from Western media sources is viewed skeptically by well-educated, well-informed young Chinese, who assume that such reporting is merely attempting to further a pro-Western agenda." (Rosen 2009, 362)

During an earlier "cosmopolitan event" – the 2008 Olympic Games in Beijing and the protests and counter-protests that ensued around the world – Chinese supporters of the Games frequently accused the US television network CNN of stoking worldwide anti-Chinese sentiment with inaccurate news reports (Latham 2009). The protest website "Anti-CNN.com" afterwards became a popular forum for media criticism and discussion (MacKinnon 2009). *Qiushi* (求实 trans: *Seek Truth*)*,* a leading theoretical journal of the CCP, published a commentary that set out a clear ideological position on this issue, representing the global media sphere as spatialised – a hierarchy watched over by a western monopoly that cloaked the truth and created invisibility:

> "China's efforts and earnestness have met with an international public opinion environment stacked unfairly against it. A small number of Western media have managed to dominate the international news and information order, masking the truth, disseminating prejudices, creating through human effort one after another 'iron curtain' and 'vast divide,' seriously impeding interaction, conversation and mutual understanding between peoples." (Guo 2009)

With such powerful dominant narratives in place, what was the experience of reporting and trying to do environmental journalism — particularly from an issue entrepreneurial perspective, where one tries to locate the edge ball space? At Tianjin, I watched as the narrative of the conference circulated, intertwined and reformulated, as it was shaped and moulded. It grew as analyses and opinions accrued and exerted pressure, from inside and outside the convention centre. Chinese ministers, for the first time, took loose grouping of Chinese NGOs and journalists aside for long briefings. "We hope NGOs can become the bridge and bond between society, the common people, and the government," chief negotiator Xie Zhenhua told one group

of Chinese NGO staff. Yet the narrative that eventually emerged was one of paralysis – and, once again, the US and China trading metaphorical blows in the closed-door negotiations.

On the second or third day of the meeting, I ran into a journalist from a provincial newspaper on the open floor of the convention centre. Halfway through our conversation, she asked me what I thought it meant for China to host the conference. I said that it challenged the usual lack of openness among Chinese officials. She took out her recorder from her pocket. What had started as an ethnographic conversation for my purposes ended as a journalistic interview for hers. “So, you are saying that China has shown a newer, more transparent face to the world?” Her reception and subsequent reframing of my statement had distorted its original meaning, but she was desperate to find a story. Later, sitting in the back of one of the rare, open negotiations, as negotiators discussed the placement of a bracketed sentence, she sat next to me and asked: “Do you understand what's happening here?”

In the maelstrom of the conference, sometimes news from outside would fall in towards us and would be subsumed into the system. Perhaps much as MacKenzie (2008) has suggested that economic theory is not a “camera” that studies money, but an “engine” that produces economic effects, it was abundantly clear that journalism and media framings — particularly those of the international media and the Chinese state media — were not only reporting but also helping to produce the negotiations themselves. Todd Stern, the US special envoy on climate change, was not in attendance, but used an appearance at the University of Michigan Law School to accuse China of bad faith, saying that Chinese negotiators had acted “almost as though the [Copenhagen] accord never happened”. Reporting of this, of course, reverberated around the conference, as a media narrative started to emerge from the confusion.

The United States wanted details on China's MRV provisions; China responded that it was useless talking about MRV until developed countries made real commitments. Tempers frayed. I watched as one Chinese delegate angrily went “off message” at a side event, refusing to talk about other, unrelated policy questions until the developed countries made quantified commitments on emissions cuts. One Chinese delegation member told my colleague: “The US constantly refused to start the discussion on

quantified emission reduction commitments [QERCs], instead sticking to technical issues like MRV [measurement, reporting and verification], thinking that these more practical and detailed issues must come first." He continued: "Talking about MRV but not discussing targets is like talking about the design of a ruler before you know what you are going to measure." The response to these tactics from developing countries and their allies among the NGOs was angry. At a press conference, an NGO organiser said, referring to the "western" perception of the country: "China is always guilty until proven innocent." In a statement, she said: "Instead of transparency, let's talk about responsibility. Where is [US negotiator] Jonathan Pershing when it comes to that conversation?"

(Post) political climates

As outlined in Chapter 2, the People's Republic of China has embraced and institutionalised not only sustainable development discourses, but also climate-change policies that are to a large extent in line with international norms. Members of the country's political elite often speak in certain terms about their commitment to internationally defined concerns about climate change. For instance, opening a conference in November 2008, Premier Wen said, "Climate change is a major global issue the international community follows closely, and it concerns the living environment of mankind and the prosperity and development of all countries." (Wen 2008, 1) China is signatory to most international environmental agreements and has passed numerous environmental laws and regulations and its 12th Five Year Plan is ambitious and aggressive in many regards (see Chapter 2).

However, it is also technocratic and top-down in its approach, and the plan has had the effect of marginalising a number of "local" concerns and more participatory approaches to sustainability. For example, the 12th FYP contains pledges to support the "healthy and orderly development" and "government supervision" of "social organisations", such as green NGOs. This closure of options and lock-in of new sorts of discourses and technologies, thus privileging certain actors, institutions and interests, is also an international phenomenon. A number of scholars have charted the ways in which motives and actors from the environmental arena have been displaced or precluded by this international institutionalisation of sustainability.

In the case of climate-change governance, it is Swyngedouw who has advanced the strongest form of this argument, in claiming that climate-change governance is a *post-political* phenomenon. This is an interesting and relevant argument to discuss in the Chinese context, though it is one that is ultimately too singular and works itself to preclude a great number of voices.

In claiming that climate has been "among the key arenas through which the post-political frame is forged, configured and entrenched," Swygedouw (2010, 216) presented a conjunction that resonates on one level with my critique of China's 12th FYP, especially since he defined the "post-political frame" as a "politics in which ideological or dissensual contestation and struggles are replaced by techno-managerial planning, expert management and administration." (Swyngedouw, 2010, 225) Swyngedouw's main focus was on western imaginaries of climate change as they were reflected in media coverage: he presented as evidence of this shifting frame two phenomena — apocalyptic narratives around climate change and the "fetishisation" of CO2. First, he claimed that the end-times imaginary – of, for example, a world without water – is "extraordinarily powerful in disavowing or displacing social conflict and antagonisms." Such narratives were, for him, discourses that did not "revolve around choosing one trajectory rather than another". Rather the apocalytic imaginary, which drew on Judeo-Christian tradition – required "radical techno-managerial and socio-cultural transformations, organized within the horizons of a capitalist order that is beyond dispute." (Swyngedouw 2010, 219) Second, Swyngedouw argued that the "disavowal of the multiple and complex relations through which environmental changes unfold" was achieved through a fetishisation of the "singular socio-chemical component (CO2)". (Swyngedouw 2010, 220)

First, it is true that apocalyptic frames can be found in climate-change discussions and understandings in the public sphere not only in western countries, but also in China. Apocalyptic images are found particularly in popular culture representations of climate change, such as the Hollywood disaster film *The Day After Tomorrow* (2004), a dramatic representation of the collapse of the thermohaline ocean circulation in the North Atlantic — an outlying, dramatic potential consequence of climate change, regarded by some climate scientists (Osborn and Kleinen 2008, 2) as a "low-risk, high-impact event that cannot be ignored". The film-makers had conceived the film in

part as an awareness-raising movie regarding climate change, and Leiserowitz (2004) has shown that it did affect the US public's perception of climate change. It also came up as a point of reference or metaphor in a number of my interviews with climate-change reporters in China. However, it is worth noting that so did the Mayan prophecy end-times movie *2012,* which is not a human-caused climate-change scenario. In both cases, the movie was cited as a generic, shorthand example of "disaster":

> "My newspaper [a provincial paper in central China] did not send reporters to Copenhagen. Instead I wrote a comment piece which mentioned the movie *2012*, and Greenpeace reprinted it."

Second, Swyngedouw is correct in stating that CO2 has become a synecdoche for a suite of complicated and interconnected issues, much as, as is discussed in Chapter 5, the elevation of material politics has often displaced or acted as signifier for political economic debates around climate change politics. In China, *ditan* (低碳 trans: "low-carbon") started to emerge around 2010, and to some extent supplanted discussions of, for example, *qihou bianhua* (气候变化 trans: "climate change") or *huanjing baohu* (环境保护 trans: "environmental protection"). In mid-2010, a red banner appeared outside my apartment in Beijing announcing that the small housing unit had become *ditan*, though no changes had been made and there was no substantive evidence was offered to support this assertion. Relatedly, one did begin to find explicitly depoliticised discourses around climate-change in the Chinese reporting of the subject, particularly in the state media. Fu Jing, a writer for the state-controlled *China Daily*, for example, opined here about his frustrations with the UN diplomacy around climate change:

> "And can we please stop politicizing climate change, and focus on life-and-death questions, because fighting climate change is a matter of life and death?" (Fu 2011, 32)

Yet Swyngedouw's claims also postulated a singular frame, built on a selective evidence base. He not only overstated the post-political framing of climate change but also unwittingly excluded many actors, institutions and discourses and thus

misrepresented the politics of climate change. This chapter should help to show how ethnographic work can expand our understanding of climate change in the public sphere, and thus help to counter a fashionable yet erroneous idea, quoted approvingly by Swygedouw, from Badiou, that “ecology is the new opium for the masses” (Swyngedouw 2010, 219). The game of interests, where power shapes framings of scientific knowledge may indeed have worked towards technocratic and other post-political ends. But Swyngedouw is also part of this game, and by arguing for a singular interpretation of the reality of climate-change politics, he has missed other realities that make up climate-change politics.

By picking a few examples of apocalyptic frames Swyngedouw has made a hasty generalisation. As scholars of climate-change reporting have noted, discursive representations of climate change are very varied. Shanahan cited the “catastrophe frame” as one of six examples of the most common climate-change framings (Shanahan 2007), alongside scientific uncertainty; national security; polar bears; money; and justice. Exploring climate change in UK newspapers, Carvalho and Burgess wrote that:

> “Different social actors (scientists, politicians, policymakers, businesses, pressure groups, and media professionals) are locked in discursive competition around how climate change risk is to be framed in the media… their framings have always been mediated through each newspaper’s preferred ideological worldview.” (Carvalho and Burgess 2005, 1458)

Hulme suggested a series of “myths” of climate change, introduced as possible ways to approach climate change as an “idea of the imagination rather than a problem to be solved” (Hulme 2009a, 340), with “presaging Apocalypse” as one of four. The other three myths are also pervasive ways of talking about climate change in the public sphere, which could similarly have been generalised, and they are also rooted in Judeo-Christian tradition: “lamenting Eden” (i.e. mourning the loss of wild nature); “constructing Babel” (i.e. mobilising to conquer nature); and “celebrating Jubilee” (i.e. using climate change as a catalyst for social and environmental justice).

Furthermore, while the “fetishisation” of carbon may exist, it is by no means complete, because it is met from many sides by resistance from actors and institutions

enmeshed in the politics of climate change, which brings us to the most salient point: that to deny the existence of ideological or dissensual contestation ("politics") of climate change is difficult, since there is such overwhelming evidence to the contrary. Urry addressed this question with reference to the "astonishing array of organized groups and networks that seek in some way or other to challenge the complex connection between capitalism and carbon that became sedimented over the twentieth century" (Urry 2011, 92), from legal challenges to street demonstrations and protests, all of which have passionately argued and contested an emerging politics of climate change.

Many such critical, politicised networks operate in the sphere of the UNFCCC, both inside the conference centres – grouped around the South Centre, Third World Network and Climate Action Network, for example – and outside the conferences, in demonstrations and fringe events held by activists, some angry at the perceived slow pace or lack of ambition in government action on climate change; others keen to advocate a stronger climate justice agenda; some to give a voice to groups that could be marginalised at the talks, such as indigenous peoples; and many to resist capitalist encroachment on environmental goals in the form of market mechanisms.

Indeed, while academics like Swyngedouw and Hulme (2009a, 355) might imagine talks like the UNFCCC to embody the purification of knowledge: the "Enlightenment project to objectivise climate through standardised measurement and quantification," leading "us moderns to see climate change as a physical transformation to be predicted and managed, if not mastered," the experience of the talks as an independent reporter is to be encompassed by proliferating cosmopolitical realities.

A group of waste-pickers from India wandered through the conference, representing the Global Alliance of Waste-Pickers and Allies. They had attended to make the link between global climate negotiations and the difficulties facing recyclers, calling for: greater recognition and protection in the form of Indian government ID cards for waste-pickers; safer working conditions; better training; and greater support for biogas and composting projects. "Our work is dirty and hard, but it has real benefits for the larger society: recycling reduces greenhouse-gas emissions and saves resources," said Maya Khodave, a leader from the KKPKP trade union in Nashik, Maharastra, in western India. The waste-pickers groups told assembled reporters at

the Meijiang Centre that they opposed financial support from the Clean Development Mechanism (CDM) for incineration plants, which they saw as increasing climate-warming emissions by reducing opportunities for recycling. “The CDM is a big problem for us,” said Khodave. “It finances private companies which are burning waste which instead could be recycled and composted. That increases emissions and hurts us economically.”

Rather than lobbying for inclusion in carbon (or methane) markets, the recycling activists articulated a critique of “carbon capitalism” (Urry 2011, 94) and instead wanted support from a new global climate fund. “Carbon markets are too volatile to provide reliable finance for waste-pickers,” said Neil Tangri, from the Global Alliance for Incinerator Alternatives (GAIA). A report by GAIA, handed out at the press conference, noted that China is a major recipient of CDM support for incineration, such as the 15-megawatt Tianying waste incinerator in the town of Qidong, Jiangsu province, in eastern China (site of huge protests against another project in 2012), citing reports of protests against the waste project from the banned spiritual group Falun Gong. Much like Meng Dengke’s investigation into the hidden politics of expert advice around the proliferation of waste incinerators, discussed in Chapter 5, the waste-pickers' intervention engaged with issues of visibility, countered the “fetishisation” of carbon and exposed local environmental concerns conflicting with the political economy of climate change. As Khodave, the trade union leader, said: “We play a very important role with the environment – and yet we are not recognised.”

Latour (1993, 2) described the dizzying effect of reading the proliferation of hybrid stories across the sections of a single newspaper, from ozone holes to reproductive technologies, in which “All of culture and all of nature get churned up again every day”. Wandering through a UN climate-change conference, even one held in a bland, vast exhibition centre with its own post office, restaurants and supplies stores, is a similarly striking experience. Colourful stalls, operated by international environmental groups, national and local governments. Conspiratorial huddles of negotiators and NGO observers. Occasional actions and stunts, their symbolism frequently obscure: in Tianjin, negotiators were invited to balance a yoke with two buckets on their shoulders as a symbol of the hope they would secure a “balanced

package" containing the elements of a future "balanced" treaty. In a campaign video posted online, a media activist interviews a negotiator in front of the obscure yoke-stunt:

> "Interviewer: Will we achieve a balanced package in these talks?
>
> Negotiator: Who's we?
>
> Interviewer: A just package?
>
> Negotiator: Balance is different from justice."

Then, as I emerged from one press conference, a Chinese journalist approached me and smiled wryly, making a mock gesture of delight and saying quietly: "China won the Nobel Prize!". The news of the award for the jailed dissident writer and activist Liu Xiaobo, author of the Charter 08 petition for democratic reforms, only minutes earlier, also ricocheted around the conference, but it had not yet been officially reported (and, of course, publicly condemned, as it was vociferously in the media over the coming days and weeks). At dinner that night with a group of Chinese investigative journalists, the discussion didn't go much further than "Have you heard about Liu Xiaobo?". But even that opening into the sphere of sensitive intimacy, of the hidden and invisible, changed the conservation. Journalists discussed "Aids villages" that they had visited (housing the many dying victims of unregulated blood-selling markets); times that they had been arrested by local police on investigations. *Neiwai youbie.*

For weeks after the conference, I tried to get a handle on these kinds of moments: the knottiness of things; the proliferation of narratives inside and outside the convention centre; the circulation of images and documents; the networks of interests at the conference; and my own place as a participant observer. Media, civil-society, government, industry, science. I drew maps and flow-charts of the actors at the conference that spread messily over pages – confusing patchworks that cut through national, sectoral, social, epistemological and ontological boundaries. At the centre of one map, and undoubtedly in a central position in any UN climate conference, was the "Documents" counter, a kind of shop-front where the latest versions of the draft negotiating texts, as well as a whole range of existing treaties and other official documents, were handed out free of charge. The *China Daily* newspaper ended up as

another central node in every diagram. Endless leaflets and invitations to side-events, even their titles jostling against each other and cutting through multiple boundaries – national, natural, cultural, epistemological and political: “No time to lose”; “Tech alliance needed to fight global warming”; “What's wrong with the U.S.? Achieving science-based emissions reductions in the face of political failure”; “Atmosphere to Earth: 'bioenergy is not carbon neutral'”; “Nature, forests and indigenous peoples are not for sale”.

Swyngedouw thus had made little allowance for the fact that superficially post-political postures can be strategic – and that social actors can and do work within these frames without necessarily entrenching a depoliticised mode of governance. As is a central theme throughout this dissertation, scratching the surface of environmentalism in China — bearing in mind the importance of the metaphor of *neiwai youbie* — exposes a complex political terrain and multiple realities. Depoliticised climate-change policy has not been mainstreamed to the extent that is assumed in Swyngedouw's and others' work. Corporations remain active in lobbying against environmental regulation (cf. Oreskes and Conway, 2010); emissions from burning fossil fuels continue to rise; special interests' influence in politics of energy and transportation – in China as elsewhere – combined with path dependency and “lock-in” are tremendously difficult to break. Social movements continue to question the “capitalist realism” (cf. Fisher 2009) that could limit the horizons of our approaches to sustainability.

Climate-change discourses, especially ones that assert a state of exception or the triumph of scientific authority over democratic process and indeed cite Apocalyptic imaginaries, do sometimes veer into the authoritarian. A recent example arose when the Global Challenges Foundation argued that risk of a significant temperature increase required ”effective global decision-making bodies,” since “we are unable to manage the environmental crisis in the current political system,” particularly because politicians have to worry about re- election — and, in a familiar trope — that media solely focus on probable and short-term damages, thus lulling the public into a false sense of security (Linnér and Pielke Jr. 2013).

But today such totalising systems are not close to actually being implemented. On the contrary, the unpredictable and often intractable terrain that climate-change

governance efforts has had to negotiate in many nations is what calls into question the effectiveness of such approaches. To encounter the Kyoto Protocol is to encounter a strange and unwieldy monster, hanging with the chains of its many constituent texts, histories, actors and interests. Its form is thanks to the "quick borrowing from past practice with other treaty regimes dealing with ozone, sulphur emissions and nuclear bombs" (Prins and Rayner 2007, v) that comprise it, texts that were in fact "not applicable in the ways that the drafters assumed" because prior challenges were tame as opposed to wicked problems (see Chapter 1).

Thus, reflecting not only the form of international climate policy itself, but also the fragmented nature of contemporary Chinese governance, while climate-change has risen up the environmental policy agenda in China and to has an extent crowded out other approaches to sustainability, it has not become a totalising project without resistance from other agendas — indeed, China's governance is far from effectively top-down or monolithic in character, especially when it comes to energy and the environment. Miriam Schröder (2012, 41) for example, has discussed the role of "hybrid actors" and market mechanisms at the local government level in Chinese climate governance. Local climate-change projects established under the UN's Clean Development Mechanism mainly exist as experimental, pilot projects, part of an "'organisational zoo' that has resulted from the indecision on how to move forward with the delivery of public services in China."

This fits with the flexibility identified by Litzinger as a key feature of contemporary political disputes in the era of economic reform in China. The "power of the nation-state at the beginning of the twenty-first century", he argued, "appears more visible and encroaching", but it is at the same time "less effective and relevant". On the one hand, the state encourages "grassroots participation and mass democracy through village elections", while on the other "it pushes forward with economic liberalization, rampant growth and modernization, and large-scale development projects." (Litzinger 2007, 298) Some of the alliances and networks on show at the conference were similarly confusing, even startlingly so. Chinese "New Leftists" from the academy conspired with technocrats from the main group of emerging economies and organised press conferences with San Francisco environmentalists, photocopying editorials from the state-controlled *China Daily* and handing them out approvingly at

press conferences. Combat between China and the US was staged in the local and international media and spilled into the conference corridors. One developing-world negotiator told me she had been chastised by the head of a delegation for reading a particular NGO newsletter, since it purportedly represented the agenda of the European Union at the talks.

Moreover, reflecting on the talks as they progressed, there became something palpably uncanny about the negotiating text itself. It was alive. Printed out in various newly bracketed forms at the end of each day (at the "Documents" counter), to be pored over by various actors and institutions, critiqued overnight, discussed and shaped and reshaped. It was a lively, technoscientific actor in our midst, far wilier and untamed than its changing, bracketed exterior might suggest. I typed a fieldnote:

> "This is the text at the centre of all this mobility – all these negotiators tripping around the world; all this social activity – all these journalists at training sessions and press briefings and bars; all these global conflicts in newspapers, perhaps on the streets; all this marginalisation, of forest dwellers, nomads, stateless; all these economic shifts, good and bad."

The text I referred to was not only the Kyoto Protocol, but also the contradiction between that and its yet undetermined and uncertain successor, existing in a number of possible worlds replete with ambiguities and ignorance. Had I been watching the text make itself visible? The text appeared as a kind of Frankenstein's monster: initially conceived out of utopian, scientistic hubris and now abandoned to this ineffective and obscure closed-door politics, buffeted by the winds of national interests and other narrow, competing agendas, wandering lost – its brackets like the bolts in its neck – through the offices of NGOs and the UN negotiations circuit, its footsteps reverberating around the media stage.

Playing, and learning, the game

How could a journalist attempt to independently map this contentious, complex international terrain of the talks? In east Beijing in October 2010, shortly before the start of the Tianjin talks, I started to find out as I sat in the front row of a training workshop for journalists and NGO activists attending the meeting, held at the country

office of the international environmental NGO Greenpeace. The Tianjin conference would include more participation from Chinese civil society groups than ever before in the climate-change arena (Schröder 2011). Although the first time Chinese NGOs had participated in an international environmental summit was in 2002, with a small delegation to the Johannesburg World Summit on Sustainable Development, the Tianjin meeting would provide the first opportunity for Chinese civil-society groups to present an entire programme of activities at a UN event, collectively organised under the banner of "Green China, Race to the Future". Reflecting on this opportunity, Schröder wrote, "It is probably fair to say that the year 2010 was the birth of China's civil climate change movement in the context of the international negotiations and international civil society." (Schröder 2011, 12)

The meeting at Greenpeace brought together about 35 young people in their 20s and 30s, a mix of journalists from local and independent domestic outlets and activists from Chinese green groups, such as Green Earth Volunteers and the Alashan SEE Ecological Association. The event neared what Callon, Lascoumes and Barthe (2011, 32) called a "hybrid forum", the dialogical space between experts, civil society and laypeople that can unleash a "process of learning". It was as much a foreign-language lesson, too: a valiant effort, since not only were the Chinese-speaking journalists learning terms in English about climate change and the negotiations, but also these were in the highly technical and procedural language of UN negotiations. Bilingual slides translated and introduced the UN meeting, appearing on the overhead projector in fast succession. A typical example is reproduced here:

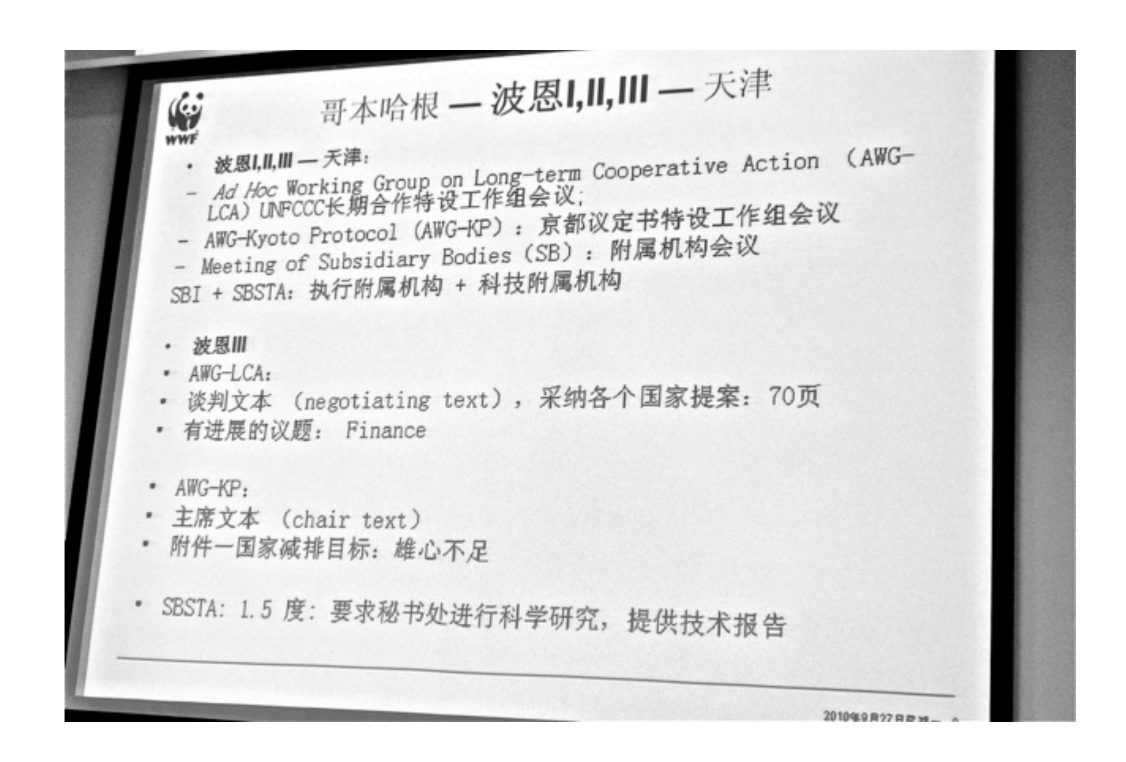


Figure 13: This slide from a pre-Tianjin training session at Greenpeace Beijing is titled with the UNFCCC negotiating timeline in 2010: "Copenhagen – Bonn 1, 2, 3 – Tianjin"

Nevertheless, the discussions suggested that these technical discussions might have social dimensions waiting to be uncovered and may even have sharp angles: one communicator noted that the question of intellectual property rights in technology transfer negotiations was "a bit too sensitive" to discuss. Participants also discussed in detail the potential sources of information about the negotiations – most of which would be held, literally, behind closed doors and would therefore invisible not only to the press but also to NGO "observers" (the official, and rather ironic, term). One journalist asked: "At Copenhagen there were Chinese-language press briefings – will there be the same thing at Tianjin, organised by the government?" A workshop organiser replied: "For independent journalists it's difficult to talk to the Chinese delegation, since you are not from the [state-controlled] *People's Daily*. Therefore, NGOs and media should collaborate closely to obtain information." This comment resonated through later discussions. Through their lack of transparency, it was clear that the United Nations and the Chinese government delegation had effectively forced journalists to lean on international NGOs and others to obtain information and analysis — to try to make the invisible visible.

Still, the quixotic struggle to report something political, beyond the procedural banalities of the conference was something many journalists tackled head-on. It is sometimes assumed that reporting climate change is less sensitive than other environmental topics. Yang (2010, 107) reflects this, writing that climate change is "politically safe" since "even if there are identifiable targets, they are unlikely to be government authorities." Certainly, climate-change effects do not permit the journalist to single out officials who have directly caused specific problems. However, since it reflects on the "national interest" in high pressure international negotiations, when climate change is discussed in the global governance frame, its content is less than politically safe.

An unusual text signed before the Copenhagen Conference in late 2009, at an internationally funded reporting training session in Beijing for Chinese climate-change journalists, points to the difficult position of the independent Chinese journalist at the negotiations. At the conclusion of the workshop, which I attended, a banner was collectively signed by the journalist-participants. It read, in both English and Chinese:

> "As media professionals, we have a responsibility to report climate change and its relevant political, economic and social issues accurately and faithfully, and help mobilize society to participate in climate change mitigation and adaptation activities.
>
> "As media professionals, we also have a responsibility to report the tremendous efforts of the Chinese government and the Chinese society in the adaptation of climate change. We should not only stress the necessity of common action to be taken by the whole mankind, but also account the actual development status of China and other developing countries as well as the 'common but differentiated responsibilities'."

The tension between these two paragraphs — the first an invocation of professional autonomy, journalistic accuracy, ethics and objectivity, though still framed as a "responsibility", rather than a "right"; and second, a reminder of the importance of supporting the Chinese government's position on climate change, including that articulated in the CBDR discourse of the Kyoto Protocol — underscores the dialectic

that is one of the central contradictions, between professional autonomy and political control, understood by many journalists reporting the international politics of the climate in China. It was a clear indication that the role of the climate-change journalist was one that depended on skilfully harnessing the power of this contradiction. In June 2010, one state media reporter who covered climate change told me explicitly that in covering the topic her role was to juggle, on the one hand, acting as a government mouthpiece, on the other, working as a journalist.

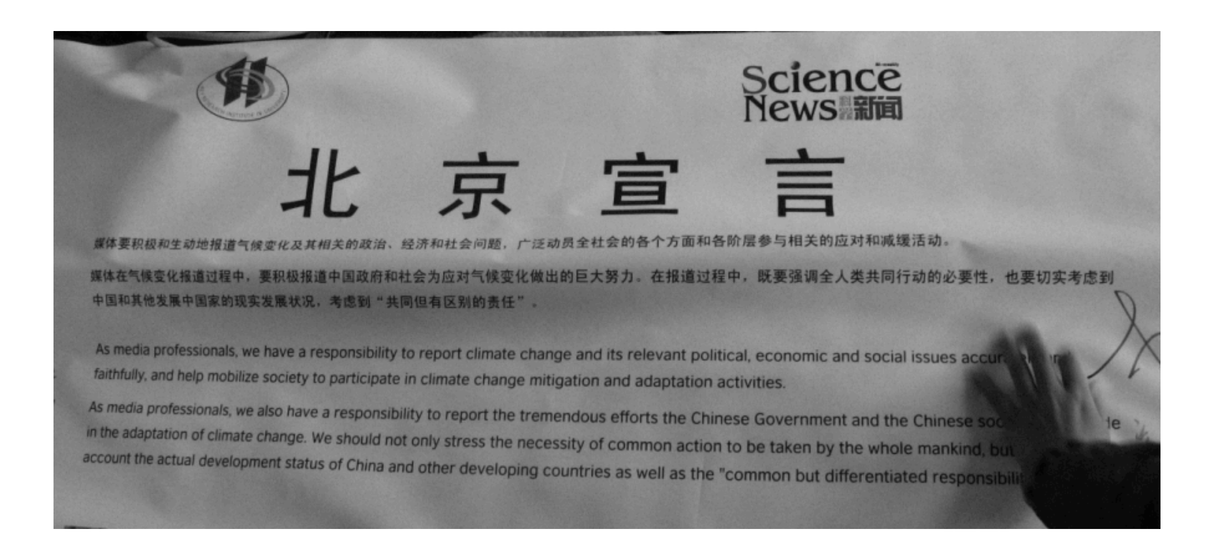


Figure 14. "Beijing Declaration" signed in 2009 at the close of a climate-change journalism training session, sponsored by the British Council.

As mentioned in Chapter 3, Bourdieu's notion of the "feel for the game" (Bourdieu 1990, 66) could help us to understand the strategic games that underpin journalists' encounters with a highly demanding, confusing and sometimes constricting field. Unsurprisingly given the context of polarised reporting focused on international pressure, one journalist from a local newspaper said that an awareness of the Chinese "national interest" had been naturalised by Chinese reporters. It was inevitable, she said, and added that reporters from western countries similarly embody their national interests:

> "The national interests are deep in my mind, so I naturally think for the nation, but it doesn't mean I will tell lies or ignore some negative information. I try to talk with American or European experts and write in a non-biased way."

Thus, an echo of "balance" here helped to keep the embodiment of national interests

in check. A similar tension was expressed by another journalist, who said that the national interest was an inescapable consideration for a reporter:

> "We need to consider the position of our country. We try our best to write in terms of universal values and with a global perspective, but sometimes it is inevitable to think about the national interest."

During the pre-Copenhagen training session, a mock press conference at which groups of reporters had to respond to the announcement of a new global agreement at Copenhagen, provided an arena for a strangely theatrical performance, which explored the boundaries of this contradiction in the international sphere of ecopolitics. In the language of Žižek (1989, 29), drawing on Sloterdijk, the playing style for these entrepreneurial journalists involved not cynicism but *kynicism*: an ironic articulation of the ruling ideology. Although it did not go so far as to reject or ridicule the government, it exposed the invisible interests at the core of dominant narrative framings to the light, suggesting journalists' collective awareness of the plural framings at work in the international sphere.

The performance that resulted was a great example of the edge ball strategy: at the workshop, participants — all of them Chinese journalists from newspapers, broadcast media and online outlets — stood up to ask questions of three reporters playing the roles of United Nations officials. With occasional chuckles, the journalists played a game, each shot closer to the edge of the metaphorical table. One by one, they assumed the "voice" of foreign, non-Chinese reporters, mainly from the developed world, to ask critical questions about the agreement. For example, one journalist prefaced her question with the claim she spoke as a *New York Times* reporter. She asked: "Why will the Clean Development Mechanism continue to fund environmentally destructive hydropower projects in China?" The question came as a surprise because it ruptured the safety of the "low-carbon" paradigm and presented a framing that did not hew to the values of the agreement signed by participants on the banner: such projects are narrowly climate friendly, especially when compared with coal-fired power, but widely criticised by environmentalists and civil-society activists, inside and outside China, for their wider ecological impacts and destructive social effects, such as mass resettlement.

By exposing a tension or contradiction in ecopolitics — perhaps between, on the one hand, the fetishisation of the element "carbon" as a metonym for a "low-carbon" development paradigm, and on the other, the wider aims and values of the environmental movement, and the politics of climate change in terms of conservation and social justice – the journalist, protected by her identity as a "*New York Times* reporter," had used the exercise to push outside the safer space of "climate communications" and into the realm of the contradiction that produces social change: the agonistic and the political. This performance flirted with *kynicism*, irony, danger and sensitivity, yet it kept within the rules of the game. The exercise seemed like practice in hitting the edge ball: it tested boundaries and helped to develop that feel for the game, significantly, with an awareness that the "national interests" frame was indeed a frame, and a game with rules, like any other.

Conclusion

Observing international climate-change governance through the lens of contemporary Chinese journalists' experiences – particularly the development of a "feel for the game" in a polarised and confusing media environment, with many political sensitivities – helps us to better understand how issue entrepreneurs might map the politics of climate change when it occurs in the technocratic, institutionalised and secretive sphere of international climate change diplomacy. Climate-change conferences are not simply depoliticised spaces, characterised by the "purification" of knowledge or the suppression of agonistic environmental politics, but they are less than transparent: it is difficult to obtain access, the jargon has the effect of marginalising most observers, and consequently journalists need to lean on actors and institutions, particularly NGOs and governments, in order to write stories, select frames and shape narratives.

Perhaps most significantly, independent Chinese journalists, in their negotiations of the landscape of climate change, avoided teleological, Apocalyptic imaginaries and carbon fetishism. As far as possible, they tried to learn to play the edge ball – and uncover where the politics might hide. Where they were less than successful, one should consider the restrictive, confusing and polarised environment — a creation apparently as much of the obscure UN system as of the Chinese government — in which they operated.

Chapter 7: Conclusions

This dissertation has explored how Chinese journalists report climate change effects, science and policy. It finds that entrepreneurial journalists, in particular, have uncovered ways to determine an "edge ball" space for productive engagement in what is a politically restrictive, changing and confusing landscape, one determined not only by media regulations and policies but also by the changing politics of the environment and sustainability. In a time when a number of pathways to sustainability have been closed in favour of technocratically conceived low-carbon strategies, some reporters have continued to practice forms of radical interpretation that map the interactions of complex, interlinked and dynamic human and natural systems, address uncertainties in a sophisticated fashion and lay out plural framings — a type of radical ontological (cosmo)politics in a context where options and framings are being closed down by a number of actors, institutions and discourses. Thus, journalists have responded to scientific controversies not with the scientistic certainty suggested by governments and international institutions, but with a plurality and humility. Journalists have responded to polarised, powerfully dominant framings of international political economic issues with sensitivity and a learned "feel for the game" that points towards more open and participatory pathways to sustainability.

Based on some of the academic writing published on climate change today, it might seem as if reporting the challenge would be less sensitive in the Chinese context than other types of environmental reporting (cf. Yang 2010); that it would reflect a largely depoliticised and managerial sphere of carbon fetishism, shaped by uncritically Apocalyptic imagery (cf. Swyngedouw 2010), displacing political contention and reflecting technocratic imperatives (Hulme 2009a) or teleological certainties (Sarewitz 2011). However, despite these critiques: climate journalism is often sensitive because of the ways it touches on national interests in international political negotiations. It is often strategically depoliticised in its choice of framing, but despite that there is a distinctly agonistic politics below the surface. More often than not, Chinese climate-change journalists attempt to capture diverse framings of environmental issues, encouraging a radical engagement with science and an openness to critiques of dominant narratives and expertise. Thus, a space for dissent is created: in the edge ball, in the margins of training sessions — and what appears

might point tentatively towards radically cosmopolitan and transcendent perspectives on the environment, embracing notions of citizenship and knowledge democracy.

This shows, among other things, the value of ethnographic observation: an investigation of the lived experience of climate-change journalism training programmes and conferences, let alone the intercessional meetings of the UNFCCC, turned out to have far more uneven terrain than might have been expected, based on published documentation or theory alone. Such totalising narratives, themselves intended as critiques of totalising narratives based on scientific authority, can be opened up through ethnographic methods — methods that are shown in this dissertation to have more in common with the radical interpretation of enterprising Chinese journalists than with those of academic theorists. Yet the challenge presented by journalists does not displace or discredit the core narratives and concerns presented by climate change. Rather, it suggests the need for the "both-and" approach: the need for, and possibility of, a participatory, grounded approach to sustainability that engages with questions of democratic politics, particularly regarding the direction of scientific and technical developments. This challenges the dominant narratives emerging in a number of environmental spheres, particularly in discussions of the so-called Anthropocene, by calling not for deeper transnational institutionalisation of scientific authority, but for a politicised democraticisation of science: a scaled-up approach to citizen science, which could take account of the cross-cutting issues generally addressed by transnational institutions.

Václav Havel, the playwright and former Czech president, observed in a remarkable speech (Havel 1994) that humans' "relationship to the world", as it had been fostered by modern science and technology, appeared to have "exhausted its potential". Man is now helpless, he said, unable to operate as a "single planetary civilisation" when confronted with "global challenges". Still, Havel argued, "science has paradoxically returned, in a roundabout way, to man" offering him "his lost integrity ... by anchoring him once more in the cosmos." Havel here cited the transcendent potential of the Gaia hypothesis: scientist James Lovelock's theory (cf. Lovelock 1972) that the thick network of interactions on Earth, between living and non-living objects, form "a kind of mega-organism". He concluded: "the only real hope of people today is probably a renewal of our certainty that we are rooted in the earth and, at the same

time, in the cosmos.” The background to Havel’s speech was shifting geopolitical forces: the end of imperialism and, more immediately, the fall of communism in Eastern Europe. Yet in a not-so-distant echo of Havel’s thinking in 1994, a number of efforts in the global scientific and environmental community have raised a similar question of how humans might transcend the cultural, political and national boundaries that apparently stymie collective, planetary thinking, with climate change and the more immediate collapse of the Copenhagen climate change conference in late 2009 as the all-important context.

Mark Lynas — one of the background players in Chapter 6, the journalist whose account in *The Guardian* of the last-minute talks at COP15 (“How do I know China wrecked the Copenhagen deal? I was in the room”) proved so explosive — has emerged as one of those spurred by the collapse of Copenhagen to propose a new approach, revisiting environmentalism and adopting a more holistic, yet more technocratic perspective on ecology than in the carbon-centric, but more explicitly political moment that led up to the summit. As Lynas (2011, 230) put it: “Here was humanity, meeting together in all our cultural and political diversity ... pooling its collective intelligence in an effort to protect its only home. The only problem was, it wasn’t working.” Now, he has revisited the Copenhagen narrative and found that the “really big story” today is that China leads the world in investment in low-carbon technologies and has proven it is “deadly serious about dealing with climate change” (Lynas 2011, 243). Others echo this sentiment, too: Flannery (2010, 111-119), another prominent writer and academic prominently invested in, but disappointed by the collapse of Copenhagen, turned his attention to the fire ants in North America, who thanks to the change in frequency of a single gene, created a superorganism the size of a modern human nation that he suggests operates like a federation of states, where an individual ant “could theoretically walk unchallenged from Virginia to Oregon”. Like Havel’s, Flannery’s hope is that “human cultural evolution” could drive us in a similar direction as those boundary-defying, transcendent ants. But it is Lynas’s attention to another event from 2010 that really sets the tone: the moment when the scientist and entrepreneur J Craig Venter created a new bacterial strain from man-made DNA, complete with an email address encoded in its genome. This, for Lynas, is the greatest symbol of the Anthropocene: the new geological era in which “pristine nature – Creation – has disappeared for ever”, when to deny our dominion

over living things, as an earlier generation of environmentalists may have done, is only to embrace "human victimhood" and relieve ourselves "of any inconvenient burden of responsibility." (Lynas 2011, 5)

The term Anthropocene started life with the Nobel prizewinning chemist Paul Crutzen (2002), who theorised that the Earth had entered a new geological period "in which human actions have become the main driver of global change" that "could see human activities push the Earth system outside the stable environment state of the Holocene with consequences that are detrimental or even catastrophic for large parts of the world" (Rockström et al 2009, 472). But the scientist-star of Lynas's account is not Venter or Crutzen, but Rockström, whose concept of "planetary boundaries" undergirds that book's structure and represents the most pervasive and influential theory in the new toolbox of the Anthropocene proponents. In brief, this framework identifies nine "thresholds" for key Earth-system processes – climate change; rate of biodiversity loss; interference with the nitrogen and phosphorus cycles; stratospheric ozone depletion; ocean acidification; freshwater use; change in land use; toxic chemical pollution; and atmospheric aerosol loading – which together determine what Rockström calls the "safe operating space for humanity". (The first three boundaries we have crossed, on the others we are safe for now.) For Lynas, as for a number of proponents of this perspective, this planetary approach to scientific knowledge could form the "organising basis for a new kind of environmental movement", one that leaves behind "some of the outdated concerns of the past" (Lynas 2011, 9). For example: greens' concerns about genetically engineered crops ("opposed by almost all Green groups worldwide, for ideological rather than scientific reasons")(*Ibid,* 102); nuclear power ("environmentally almost completely benign")(*Ibid,* 10); and industrial agriculture ("it may be preferable to focus on improving high-yield mechanised agriculture on the most fertile farmland to feed the new urban residents, whilst allowing mountainsides and other marginal lands to revert to forest")(*Ibid,* 136). The philosophy is summed up by Lynas as "pragmatism beats purism" (*Ibid*, 192), but it also represents a negation of democratic politics, in which citizens, not experts, might choose their own boundaries and visions of progress — and which technologies they would like to see in the world. Leach, whose identity not only as an anthropologist but also a participant in high-level UN expert dialogues gives her an interesting vantage-point, has discussed the ways in which this metaphor of the

Anthropocene might work to scientistic or authoritarian effect, discussing the closing down effect in the consensus message expressed at UN level discussions about "boundaries":

> "Is there a contradiction between the world of the anthropocene, and democracy? The anthropocene, with its associated concepts of planetary boundaries and 'hard' environmental threats and limits, encourage a focus on clear single goals and solutions. It is co-constructed with ideas of scientific authority and incontrovertible evidence; with the closing down of uncertainty or at least its reduction into clear, manageable risks and consensual messages." (Leach 2013)

Significantly, Leach contrasts this framing with the contestation present in environmental social movements, in an echo of my own ethnographic observations, particularly in the previous chapter:

> "This is a far cry… from some other worlds: on the ground in the global south and north, where people and social movements debate and contest their interests, values and desired futures; and the world according to democratic theory, in which such politics are worth acknowledging and respecting. In this world, there is a need to open up, make uncertainty and ambiguity and dissensus explicit, and foster diversity to cope with it." (Leach 2013)

In the Chinese context, the most interesting attempt to conceive of a philosophy of the Anthropocene has come from the historian of China Prasenjit Duara, who addressed an audience of Chinese artists, students and academics at an art gallery in Shanghai in 2010. Duara (2010) argued that throughout "the history of complex societies there has long been the human urge to transcendence; the urge to transcend the conditions of suffering, inequities and achieve a condition unknown in the human world." He claimed that this was not only the "basis of all world religions," but significant now, because the "world needs to be saved, perhaps less metaphorically and more physically than ever before." In an echo, conscious or not, of Havel, Duara said: "Planetary sustainability is the transcendent goal towards which we must all aspire, above all…" But, citing Weber, he noted the apparent lack of a "strong sense of the transcendent" in Chinese philosophy, given "the powerful role of the imperial state in

Chinese history," which "tended to preclude access to the transcendent power of Heaven by Confucians and other popular groups." Still, he noted there were Buddhist and Daoist ideas that appealed to transcendent ideals, movements which "did much to challenge the establishment and direct the course of history whether through popular resistance or advocacy of ethical codes of individual and group conduct."

It is a theme that was echoed by journalist Jonathan Watts, who has written extensively (cf Watts 2010) about China's environment as the Asia Environment Correspondent for *The Guardian*. In an interview with me in 2010, he said:

> "There have always been competing philosophies in China. It intrigued me that you can't really have a Daoist civilisation – it's almost an embrace and acceptance of the wild, of anarchy and chaos… However, in Chinese history, you hear that some Mandarins were Confucians while working in their official positions, but when they went home they tended their gardens, or wrote poetry, and gave space to their Daoist sides… I spoke to the popular philosopher Yu Dan, who has made her name writing about Confucian ideas – which is very much in line with Party orthodoxy at the moment. She told me that she is more of a Daoist, but that she doesn't think 'China is ready for Daoism yet'. Certainly in the last 60 years, that Daoist side has faded. The trend has been to order things… [The Chinese environmental philosopher Tang Xiyang] says: 'If China is going to solve its problems, it needs more Daoism.'" (Geall 2010a)

For Duara (2010), the need for transcendent action, rooted in a deeper understanding of Chinese philosophical tradition, is the same one that forms a background to Chapter 4: the need for transnational, cooperative solutions to shared water resources in the context of uncertainties due to climate change.

> "Today almost every major Asian society has problems of water sustainability and these all require transnational solutions. There is of course a need to co-ordinate common and linked problems of regional public goods. This does not only include water but climate change, public health, and the environment… Most essential to proper co-ordination of these issues is the ability of a transnational agency to be able to independently and transparently observe the

data within each country, an independence that is presently denied by China." (Duara 2010)

It is Duara's (2010) suggestion that perhaps by sacralising nature, Asia can "feasibly elevate sustainability to a transcendent ideal", one that could overcome "the imperative felt by national leaders to not sacrifice national interests." Drawing on the another Asian cosmopolitanism, the pantheism of Tagore, he suggested this might echo in the "Chinese environmental NGOs [now using] web platforms for groups to self-organise." Thus, Duara explored the possible roots of a value-shift towards more "sustainable behaviour," towards sustainability as "an emergent ideal, a new type of transcendence and sacrality with the capacity to motivate and mobilise persons and groups," not as a "sovereign power" but, interestingly and perhaps in an echo of this Daoist underside, through "a hidden or subterranean cultural process… which Michel Foucault identified as 'the games of truth'." Perhaps similarly, Zhang and Barr (2013, 53) refer to the strategy of "wielding a discreet influence" (潜移默化 pron: *qianyimohua*), in which "the invitation to 'see' nurtures an urge to take action in otherwise indifferent individuals."

Could this bottom-up, hidden process of unfolding point to an opening, towards a radically cosmopolitical set of alternative-Anthropocene perspectives that could harness the powerful games of our edge-ball players? In other words, are there ways to scale up critical citizen-science and radically interpretive approaches that could address planetary issues, in ways that do not displace local narratives and framings, but embrace them? There is perhaps a vision, or a potential strategy, to be found, which draws on the strategies of China's issue entrepreneurs, but goes beyond what is conventionally regarded as "journalism", a strategy that could connect, for example:

- the journalists and students who attended Green Beagle's salons and subsequently distributed portable handheld detectors for Beijing residents to measure PM2.5 pollution (see Chapter 3);
- the community art project FLOAT Beijing, which used small pollution monitors fixed on kites, flown as a hobby by residents, to publish real-time air-quality data online, creating an open-source, online alternative to information published by the government bureaus (Kee 2012);

- the green group based in Nanjing, in eastern China, which engaged local teenagers in crowd-sourced water-quality monitoring (Barnes 2012);
- the Beijing-based Institute of Public and Environmental Affairs, which used open government information to build the country's first publicly accessible online databases of water and air pollution (Boyd 2013);
- the Weibo social-media users, so-called “netizens”, who offered money to their local officials to swim in their waterways, complete with photos of the fetid, polluted streams (Geall 2013c);
- the bloggers making their own tally of Beijing’s blue-sky days (see Chapter 3); and,
- Tashi Sange, the birdwatching Tibetan monk, who paints the changing landscape near his monastery and speaks at scientific and conservation conferences across China (Geng 2011);

with their international “counterparts”, or potential allies:

- the Bayaka pygmy hunters in the Congo Basin, opposed to illegal loggers encroaching on their land, who with anthropologists and hackers have developed smart-phone-type open source devices to map incursions (Rowland 2012);
- the residents of Deptford, in South London, concerned about a noisy scrapyard across the road from a school, who with academics and social entrepreneurs developed a simple methodology for collecting noise measurements with cheap, hand-held devices, which led to the creation of an online map of noise pollution in the area (Geall 2013a);
- the creators of “people’s satellites” in Louisiana, using cameras, helium balloons and kites to map the BP oil slick with a resolution many times better than NASA satellite photos, allowing conservationists to distinguish the different breeds of sea birds affected by the disaster (MacQuillan 2013);
- the international members of the website oldweather.org, who transcribe century-old ship log books to gather information about historical weather conditions, to aid better climate modelling (Geall 2013a).

Such radical approaches to knowledge, outside the realms of academic theory and embedded in social movements and practice, have already blurred the boundaries of local understanding and scientific authority, by taking an open and participatory

approach to scientific knowledge that typically takes into account how “science is often the most powerful form of legitimation in politics, and particularly in the proposal and evaluation of technological interventions in the natural world”, seeking to democratise science rather than reject it, by “integrating other criteria (ethical, democratic, social and so on) which are equally important in making decisions.” (Barry 2002, 89) In the words of Francois Grey (2012), a physicist at Beijing’s Tsinghua University and coordinator of the Citizen Cyberscience Centre in Geneva, Switzerland, these approaches embody the spirit that, “science is too important to be left to scientists alone.” Science has never been wholly confined to the labs, of course: citizen science has a rich history to draw upon. From the self-taught English biologist T. H. Huxley, who transformed the public understanding of evolution through his advocacy of Darwin’s work, to amateur stargazers. But as citizen science undergoes a renaissance concurrent to the rise of the Anthropocene-era quest for transcendence, its ongoing evolution and various subspecies and mutations — extreme citizen science (Haklay 2011), citizen cyberscience (Grey 2009), DIYbio (Fuller 2013), crowdmapping (Tobias 2011), hackerspaces (Lindtner 2012), the internet of things (Van Kranenburg 2007) — become all the more important.

The changing nature of scientific discovery and expertise might reflect back on science, with theorists such as Nielson suggesting optimistically that more open, networked science heralds the “the day-to-day process of science… dramatically [shifting] over the next few decades, speeding up the rate at which discoveries are made, and making possible whole new ways of attacking problems,” or it might inspire critical “hacktivist” approaches, summed up by the Electronic Disturbance Theater’s “science of the oppressed”, who wrote about the “alternative social forms of life and art that fall between the known and unknown, between fiction and the real, between clean science and dirty science — each a part of a long history of an epistemology of social production which privileges the standpoint of the proletariat, the multitude, the open hacks of the DIY moments, and of autonomous investigators who stage test zones of cognitive styles... concrete practices as speculation and speculation as concrete practices — at the speed of dreams.” But, crucially, it could also reflect out to the pursuit of knowledge among journalists, in China and around the world.

For example, the Drone Journalism Lab at the University of Nebraska-Lincoln and the Drone Journalism Program at the University of Missouri were both founded in 2011 to push the legal, professional and theoretical boundaries of the use of cheap, unmanned aerial vehicles in the public interest. And interestingly, China might to be one of the few jurisdictions where such interventions could be legal (Statt 2013), opening its first "hackerspace" in 2010 in Shanghai (Lindtner 2012). In 2010, Green Beagle organised a "citizen journalism" programme for a group of young people to document on the Internet the environment as it changed around them in Beijing, principally using microblogs and blogs. Ubiquitous computing and mobile social media technologies have transformed the potential for environmental activism in China, as well as for more subtle, educative approaches that resonate with Duara's particular hope. Zhang and Barr (2013, 41) cited the activist Xiao Wangzi, whose organisation hoped to train activists to become "citizen environmental protection experts" (公民环保专家 pron: *gongmin huanbao zhuanjia*), and noted that:

> "We must admit we live in a digital age… digital cameras and digital recorders are no longer a luxury for a great number of people. Photography provides a reasonable opportunity and an acceptable method for most people to get to know nature." (Zhang and Barr 2013, 41)

Yet with a critical, reflexive attention to the material realities of the technologies they had employed, Green Beagle's citizen journalism sessions in 2010 brought them into frequent contact with the Institute of Public and Environmental Affairs, with whom they co-organised a training session in Beijing on pollution in the electronics and Information Technology industry. It was during this meeting, held in a mock-Daoist luxury restaurant on the outskirts of the city, that I was first struck by the contrast and continuities between the work of the fifth-century poet Xie Lingyun and the perspective of today's environmental writers. In 'Dwelling in the Mountains', described as the first environmental poem in Chinese, Xie puzzled over and catalogued myriad species in the waters of eastern China, with what Elvin (2004, 356) called "a flicker of proto-Darwinian insight":

> "There are fish like
>
> snake-fish and trout, perch and tench,

red-eye and yellow-gill, dace and carp,

bream, sturgeon, skate, mandarin-fish,

flying-fish, bass, mullet and wax-fish:

a rainbow confusion of colours blurred,

glistening brocade, cloud-fresh schools

nibbling duckweed, frolicking in waves,

drifting among ghost-eye, flowing deep." (Hinton 2001, 33)

This reach into the cultural history of citizen participation and knowledge of the environment could provide another resonance in a democratised yet grounded quest for transcendence — but today, it is most poignant because of the contrast with the thick pollution of China's waters, not to mention the murk of secrecy and obfuscation faced by its environmental journalists. At the workshop, IPE — led and founded by the former journalist Ma Jun — described how they were using investigative reporting techniques to track the environmental impacts of China's role as the workshop of high-technology manufacturing. Beneath the sheen of these sought-after products was a dirty secret. These investigations, carried out with a coalition of Chinese green NGOs, focused on the supply chains of multinational brands, particularly the secretive electronics giant Apple. In the description of their investigation of Nantaizi Lake, in Hubei province, central China, we find there are no fish left at all. Wan Zhengyou, a fisherman, took the investigators around the lake to see the effects of Meiko Electronics, a suspected supplier of printed circuit boards to Apple, pumping effluent into the lake through a drainage channel. As it was described in IPE's report:

> "We rode in a small fishing boat out into Nantaizi Lake. The water in the lake was an ash grey colour with white bubbles accompanying groups of black floating objects. The water carrying these objects then slowly flowed towards the most distant parts of the lake until they blended into a haze on the horizon. Nantaizi Lake is directly linked to the Yangtze River meaning the

contaminated water will eventually feed into the Yangtze River.

> "We turned around and rowed back towards the small drainage channel and found that the water around the channel's outlet was quite shallow revealing a small ash grey mudflat. Wan Zhengyou turned his oar in the water stirring up thick grey mud. On entering the small drainage channel, the colour of the water changed from ash grey to a milky white, making it seem as if we were rowing on a river of milk. It was only each time an oar cut through the water that black mud was brought up to the surface and churned together with the milky white liquid." (Friends of Nature et al 2011)

Can such innovations then, point to a way forward on climate change? This dissertation has examined how in the context of the 12th Five Year Plan, with a new set of aggressive, "low-carbon" policy priorities embedded within the institutions that draw on such a unique and turbulent socio-technical history, a different type of approach might be found. I caught a glimmer of that hope also in the weeks after the Tianjin conference, when, working with *chinadialogue* as a rapporteur, I attended and reported on an international climate-change conference organised in Hong Kong by the think-tank Civic Exchange. The conference also acted as an outpost of the C40 cities network: a group linking the mayors of the world's megacities committed to addressing climate change. Although the keynote speeches were familiarly embedded in the discourse of the UNFCCC and other transnational institutions — Hong Kong's environment secretary said that "we need science to substantiate the evidence of climate change; to those who doubt it: facts speak louder than words"; Rockström spoke about the safe operating space for humanity (in a speech the following year, he would add that in this space, the nation-state had become "an obsolete unit"); the outspoken NASA scientist Jim Hansen said that he had been impressed by the widespread investment in clean technology in China; Chinese official Sun Zhen stressed China's role as a "responsible developing country", its commitment to greater transparency and his hope for a binding agreement at COP16 in Cancun, Mexico — the sessions, which were not closed to reporters and civil society to the same extent as the UN sessions, were something different.

The discussions were wide-ranging, pragmatic, cross-cutting and innovative. The discussion was a plural one that did not aim for consensus and closing down so much

as dialogue, tolerance and the opening of options. City mayors discussed a range of financing structures for greener infrastructure; markets or taxes, structured in a number of different fashions; others discussed charging points for electric vehicles, zoning, public participation. Davis (2010, 30) reached much the same conclusion in the aftermath of Copenhagen, alluding to Gramsci's hoary axiom: despite his pessimism of the intellect, regarding the effects of climate change, his optimism of the will derived from the paradox that "the urbanisation of humanity — is also potentially the principal solution to the problem of survival in the later twentieth century." The Noah's Ark he proposed would be "constructed out of the materials that a desperate humanity finds at hand in insurgent communities, pirate technologies, bootlegged media, rebel science and forgotten utopias."

The place of urbanisation in addressing climate change is beyond the scope of this dissertation. How we might marry the municipal libertarianism of Bookchin with the socialist imagination of Jacobs and the creativity of Bauhaus is an important task with a great potential that Davis (2010, 43) has identified: namely, that "there is no planetary shortage of 'carrying capacity' if we are willing to make democratic public space, rather than modular, private consumption, the engine of sustainable equality". However, the democratic imagination in the reporting of the environment and climate change does at least perhaps point to that optimism of the will — a realisation of the idea that low-carbon innovation might be a participatory, bottom-up process that harnesses diversity and multiple framings, rather than seeking an external authority to enforce the closing down of options.

While in all likelihood, western nations will find they have much to learn from the investment in clean technologies in China's 12th Five Year Plan and the deployment of clean technologies — and China might find it has something to learn from the history of institutionalised post-normal scientific engagement and public participation in Europe, from the public debate around GM (cf. Callon, Lascoumes and Barthe 2011) to energy controversies in Germany (cf. Pielke Jr. 2012a) — there is even also the possibility that journalists around the world might learn something from the creativity and gamesmanship of their Chinese counterparts. Moreover, the very length and depth of on-the-ground reporting in a booming media market is a feature of Chinese life that seems to set it apart from current trends in western societies. Where

journalists I interviewed might conduct a four-month-long water-pollution investigation that could never be published, critiques of the British newspaper industry (cf. Davies 2008), for example, point to the diminishing time and resources devoted to actual reporting, in favour of rewritten news-agency and public-relations releases.

Bibliography

Agrawal, Arun 2005, *Environmentality: Technologies of Government and the Making of Subjects.* (Durham, NC: Duke University Press).

Akhavan-Majid, Roya 2004, "Mass Media Reform in China," *Gazette* 66 (6), pp.553-565.

Ai Mo 2010, "The Stage," *Mingbao*, available at: http://loudcanary.com/2010/04/28/the-stage-the-yushu-earthquake-in-fact-and-fiction/ (Accessed on November 8, 2013).

Anderson, Kevin and Alice Bows 2008, "Reframing the climate change challenge in light of post-2000 emission trends," *Philosophical Transactions of the Royal Society A,* 366 (1882), pp.3863-3882.

Andreas, Joel 2010, "A Shanghai Model?" *New Left Review* September/October, pp.63-86.

Andrews, Steven Q. 2011, "Beijing's hazardous blue sky," *chinadialogue*, December 5, available at: https://www.chinadialogue.net/article/show/single/en/4661-Beijing-s-hazardous-blue-sky (Accessed on November 10, 2013).

Ansfield, Jonathan "Alchemy of a protest: the case of Xiamen PX" in: Sam Geall (ed.) *China and the Environment: The Green Revolution* (London: Zed Books, 2013), pp. 136-202.

Appadurai, Arjun 1996, *Modernity at Large: Cultural Dimensions of Globalization.* (Minneapolis: University of Minnesota Press).

Article 19 2010, *Access to Environmental Information in China: Evaluation of Local Compliance*. (London: Article 19).

Bai, Haijun 2010, *Tanke Diguo* (Carbon Empire). (Beijing: China Friendship Publishers).

Balkan, Elizabeth 2012, "The dirty truth about China's incinerators," *chinadialogue*, July 4.

Bandurski, David and Martin Hala 2010, *Investigative Journalism in China.* (Hong Kong: Hong Kong University Press).

Bandyopadhyay, Jayanta 2013, "Securing the Himalayas as the water tower of Asia: an environmental perspective," *Asia Policy* 16, pp.45-50.

Barnes, Abi 2012, "Kite Sensorship: Regulating China's Airways," *China Environment Forum Brief*, October.

Barry, John 2002, "Citizen science," in: John Barry and E. Gene Frankland (eds) *International Encyclopedia of Environmental Politics*. (London: Routledge), p.89.

Barry, Andrew 2010, "Materialist politics: Metallurgy," in: Bruce Braun and Sarah J. Whatmore (eds), *Political Matter: Technoscience, Democracy and Public Life*. (Minneapolis and London: University of Minnesota Press), pp.89-118.

BBC Media Action 2013, *Climate Asia Data Portal* [Online], available at http://www.bbc.co.uk/mediaaction/climateasiadataportal (Accessed November 13, 2013).

BBC World Service 2007, "All Countries Need to Take Major Steps on Climate Change: Global Poll," available at: http://news.bbc.co.uk/1/shared/bsp/hi/pdfs/25_09_07climatepoll.pdf (Accessed November 13, 2013).

Beck, Ulrich 2004, "The Truth of Others: A Cosmopolitan Approach," *Common Knowledge* 10 (3), pp.430-449.

Beck, Ulrich 2010, "Climate for Change, or How to Create a Green Modernity?" *Theory Culture Society* 27, pp.254-266.

Behnke Jr, Roy H., Ian Scoones and Carol Kerven 1993, *Range Ecology at Disequilibrium: new models of natural variability and pastoral adaptation in African savannas*. (London: Overseas Development Institute).

Bennett, Gordon 1979, “Mass Campaigns and Earthquakes: Hai-Ch'eng, 1975,” *The China Quarterly* 77 (March), pp.94-112.

Bloomberg News 2013, “Chinese Anger Over Pollution Becomes Cause of Social Unrest”, March 6.

Boland, Alana 1998, “Three Gorges Debate and Scientific Decision-Making in China,” *China Information* 13, pp.25-42.

Bookchin, Murray 1995, *Re-enchanting humanity: a defense of the human spirit against antihumanism, misanthropy, mysticism, and primitivism*. (London; New York: Cassell.)

Bourdieu, Pierre 1990, *The Logic of Practice.* (Cambridge: Polity).

Boyd, Olivia 2013, “The birth of Chinese environmentalism: key campaigns,” in: Sam Geall (ed.) *China and the Environment: the Green Revolution* (London: Zed Books) pp.40-95.

Boykoff, Maxwell T. 2011, *Who Speaks for the Climate? Making Sense of Media Reporting on Climate Change* (Cambridge: Cambridge University Press)

Boykoff, Maxwell T. and Jules M. Boykoff 2004, “Balance as bias: global warming and the U.S. prestige press," *Global Environmental Change* 15 (2) pp.125–136.

Boykoff, Maxwell T. and Michael K. Goodman 2009, “Conspicuous Redemption: Promises and Perils of Celebrity Involvement in Climate Change,” *Geoforum* 40, pp.395-406.

Brettell, Anna 2009, “Shifting Openings and Trap Doors in the Maze of China’s Hydropower Policy Processes,” *Asia Policy* 8, pp.126-133.

Brosius, J Peter 1999, “Green Dots, Pink Hearts: Displacing Politics from the Malaysian Rain Forest,” *American Anthropologist* 101 (1), pp.36-57.

Bulletin of the Atomic Scientists 1972, “Tang Ke, Chinese Delegation Statement at UN Stockholm Conference,” September, pp.54-55.

Butler, Judith 2004, *Precarious Life: The Power of Mourning and Violence.* (London: Verso.)

Calhoun, Craig and Guobin Yang 2007, "Media, Civil Society, and the Rise of a Green Public Sphere in China," *China Information* 21, pp.211-236.

Callon, Michel, Pierre Lascoumes and Yannick Barthe 2011, *Acting in an Uncertain World*. (Cambridge, MA: MIT Press).

Carvalho, Anabela and Jacquelin Burgess 2005, "Cultural Circuits of Climate Change in U.K. Broadsheet Newspapers, 1985–2003" *Risk Analysis* 25 (6), pp.1457-1469.

Castells, Manuel 2004, *The Power of Identity: The Information Age: Economy, Society and Culture, Volume 2.* (New York: John Wiley & Sons).

Cha, Ariana Eunjung 2009, "In China, a Grass-Roots Rebellion," *Washington Post*, January 29.

Chakrabarty, Dipesh 2009, "The Climate of History: Four Theses," *Critical Inquiry* 35 (2), pp.197-222.

Chamberlain, Gethin 2010, "Climate change: Chinese adviser calls for open mind on causes," *The Guardian*, January 24.

Chatty, Dawn 2002, *Conservation and mobile indigenous people: displacement, forced settlement, and sustainable development.* (Oxford: Berghahn Books).

Chellaney, Brahma 2011, *Water: Asia's New Battleground*. (Georgetown: Georgetown University Press).

Chen Zifan 2011, "Beijing's blue sky diary," *chinadialogue*, February 28, available at: https://www.chinadialogue.net/article/show/single/en/4134-Beijing-s-blue-sky-diary (Accessed November 10, 2013).

Cheng Guangjin and Ma Liyao 2010, "Climate change to blame for Mekong drought," *China Daily*, April 3.

China Center for Climate Change Communication 2012, “Public Climate Change Awareness and Climate Change Communication in China,” available at http://environment.yale.edu/climate-communication/files/2sided-highlights-China-e.pdf (Accessed November 13, 2013).

China Council on International Cooperation on Environment and Development (CCICED) 2013, “Media and Public Participation Policies on Promoting China’s Green Development,” available at: http://www.cciced.net/encciced/event/AGM_1/2013agm/meetdoc/201311/P020131105351427854902.pdf (accessed November 7, 2013)

China Daily 2007, “Ecological civilization,” *China Daily*, October 24, available at: http://www.chinadaily.com.cn/opinion/2007-10/24/content_6201964.htm (Accessed November 9, 2013).

China Daily 2010, “Top envoy ‘not seeking excuse’,” *China Daily*, January 26, available at: http://www.chinadaily.com.cn/china/2010-01/26/content_9377202.htm (Accessed December 11, 2013).

chinadialogue, *Report on Environmental Health in the Pearl River Delta* (German Asia Foundation and chinadialogue, 2011), at: http://www.eu-china.net/english/Resources/chinadialogue_2011_Report-on-Environmental-Health-in-the-Pearl-River-Delta.html

China Internet Network Information Center (CNNIC) 2013, *Statistical Report on Internet Development in China*, January, available at: http://www1.cnnic.cn/IDR/ReportDownloads/201302/P020130312536825920279.pdf (Accessed November 9, 2013).

Choy, Tim 2011, *Ecologies of Comparison: An Ethnography of Endangerment in Hong Kong*. (Durham and London: Duke University Press).

Comaroff, John and Jean Comaroff 1992, *Ethnography and the Historical Imagination.* (Boulder, CO: Westview Press).

Comaroff, John and Jean Comaroff 1999, "Occult economies and the violence of abstraction: notes from the South African postcolony," *American Ethnologist* 26, pp.279-303.

Conrad, Björn 2012, "China in Copenhagen: Reconciling the 'Beijing Climate Revolution' and the 'Copenhagen Climate Obstinacy,'" *China Quarterly* 210, pp. 435-455.

Cook, John, Dana Nuccitelli, Sarah A Green, Mark Richardson, Bärbel Winkler, Rob Painting, Robert Way, Peter Jacobs and Andrew Skuce 2013, "Quantifying the consensus on anthropogenic global warming in the scientific literature," *Environmental Research Letters*, 8 (2), 024024.

Crutzen, Paul 2002, "Geology of mankind," *Nature* 415 (23), 3 January.

Dai Qing 1994, *Yangtze! Yangtze!: Debate over the Three Gorges Project* (London: Earthscan).

Dai Qing 2007, "Dai Qing on Menashe Kadishman's *Cracked Earth* 1973–4," in: *Micro-Tate 9: Environment Special*, available at: http://www.tate.org.uk/context-comment/articles/microtate-9-environment-special (Accessed November 8, 2013).

Davies, Nick 2008, *Flat Earth News.* (London: Chatto and Windus).

Davis, Mike. 2010, "Who will build the ark?" *New Left Review*, Jan/Feb, pp.29-48.

Dikotter, Frank, 2010. *Mao's Great Famine.* (London: Bloomsbury).

Dittmer, Lowell 1988, *China's Continuous Revolution: The Post-Liberation Epoch, 1949-1981.* (Berkeley: University of California Press).

Dixit, Kunda 2010, "This separate category," in: Keya Acharya and Frederick Noronha (eds), *The green pen: Essays on environmental journalism from India and South Asia.* (New Delhi: Sage Publications), pp.16–22.

Dong Dong 2013, "Legitimating journalistic authority under the state's shadow: a case study of the Environmental Press Awards in China," *Chinese Journal of Communication*.

Dong Zhi and Kong Chen 2011, "Beijing – the forming of a polycentric megacity," Masters Thesis in European Spatial Planning and Regional Development, Blekinge Institute of Technology.

Doniger, David 2012, "The world's governments saved the ozone layer. They can save the climate too," *chinadialogue*, June 11, available at: https://www.chinadialogue.net/article/show/single/en/5295-The-world-s-governments-saved-the-ozone-layer-They-can-save-the-climate-too- (Accessed November 13, 2013).

Duara, Prasenjit 2010, "Sustainability and the Crisis of Transcendence: A Long Historical View," Lecture given at Shanghai Art Museum, Shanghai, November.

Economy, Elizabeth C. 2005, "Environmental Enforcement in China," in: Kristen A. Day (ed) *China's Environment and the Challenge of Sustainable Development*. (Armonk, NY: East Gate), pp.102-20.

Edin, Maria 2003, "State Capacity and Local Agent Control in China: CCP Cadre Management from a Township Perspective', *The China Quarterly* 173, pp. 35- 52.

Edmonds, Richard Louis 2011, "The Evolution of Environmental Policy in the People's Republic of China," *Journal of Current Chinese Affairs* 40 (3), pp.13-35.

Elvin, Mark 2004, *The Retreat of the Elephants: An Environmental History of China*. (New Haven: Yale University Press).

Escobar, Arturo 1999, "After Nature: Steps to an Antiessentialist Political Ecology", *Current Anthropology* 40 (1), pp.1-30.

European Council on Foreign Relations 2010, "Climate Policies After Copenhagen," *China Analysis* 27, June.

Fan, C. Cindy 2006, “China’s eleventh five-year plan (2006–2010): From ‘getting rich first’ to ‘common prosperity,’” *Eurasian Geography and Economics* 47 (6), pp.708–723.

Fei Xiaotong 1992 [1947], *From the Soil: The Foundations of Chinese Society*. (Berkeley: University of California Press).

Feng Yongfeng 2012, “Citizen journalists in China,” *chinadialogue*, April 11, available at: https://www.chinadialogue.net/article/show/single/en/4866-China-s-citizen-journalists (Accessed November 12, 2013).

Ferguson, James and Akhil Gupta 2002, “Spatializing states: toward an ethnography of neoliberal governmentality,” *American Ethnologist* 29 (4), pp.981-1002.

Fioravanti, Carlos 2007, “Climate Change Reporting in Brazil,” paper presented at *Carbonundrums: Making sense of climate change reporting around the world*, June 27, University of Oxford.

Fischer, Frank 2005, “Are scientists irrational? Risk assessment in practical reason,” in: Melissa Leach, Ian Scoones and Brian Wynne 2005. *Science and Citizens: Globalization and the Challenge of Engagement*. (London: Zed Books), pp.54-65.

Fisher, Mark 2009, *Capitalist Realism: Is There No Alternative?* (London: Zero Books).

Flannery, Tim 2010, *Here on Earth*. (Melbourne: The Text Publishing House).

Fong, Vanessa 2007, “SARS, a shipwreck, a NATO attack, and September 11, 2001: Global information flows and Chinese responses to tragic news events,” *American Ethnologist* 34 (3), pp.521-539.

Frenkiel, Emilie 2011, “Monitoring Changes in China’s Media,” *Books and Ideas*, September 30.

Friends of Nature, Institute of Public and Environmental Affairs, Green Beagle, Envirofriends, Green Stone Environmental Action Network 2011, *The Other Side of Apple II: Pollution Spreads through Apple’s Supply Chain*, available at:

http://www.greenbiz.com/sites/default/files/63637255-Apple-II-Final-20-14.pdf (Accessed November 13, 2013).

Fu Jing 2011, *Jumping to Reach Clear Sky*. (Beijing: New World Press).

Fu Jing and Cheng Guangjing 2009, "Wen on Whirlwind Phone Diplomacy for Climate Change," *China Daily*, December 14.

Fu, King-wa and Michael Chau 2013, "Reality Check for the Chinese Microblog Space: A Random Sampling Approach," *PLoS ONE* 8 (3), e58356.

Fuller, Steve 2013, "Ninety-degree revolution," *Aeon*, October 24, available at: http://www.aeonmagazine.com/living-together/right-and-left-are-fading-the-future-is-black-and-green/ (Accessed November 13, 2013).

Funtowicz, S.O. and Jerome R. Ravetz 1991, "A New Scientific Methodology for Global Environmental Issues," in: *Ecological Economics: The Science and Management of Sustainability*, Robert Costanza (ed), (New York: Columbia University Press), pp.137–152.

Gallie, Walter B. 1956, "Essentially Contested Concepts," *Proceedings of the Aristotelian Society* 56, pp.167–198.

Geall, Sam 2010a, "China's search for greener values," *chinadialogue*, July 21, available here: https://www.chinadialogue.net/article/show/single/en/3731-China-s-search-for-greener-values (Accessed November 13, 2013).

Geall, Sam 2010b, "Lies, damn lies and Chinese science," *New Humanist*, September 1.

Geall, Sam 2010c, "Tianjin by numbers," *chinadialogue*, October 11, available at: https://www.chinadialogue.net/article/show/single/en/3864-Tianjin-by-numbers- (Accessed November 17, 2013).

Geall, Sam 2011a, *Climate-change journalism in China: Opportunities for international cooperation.* (Beijing; Copenhagen; London: Caixin Media, International Media Support and chinadialogue), available at:

http://www.chinadialogue.net/content/file_en/4289/climatejournalism.pdf (Accessed November 8, 2013)

Geall, Sam 2011b, "Data Trap," *Index on Censorship* 40 (4), pp.48-58.

Geall, Sam 2012, "Media Coverage of the Environment," in Sam Geall et al (eds) *Berkshire Encyclopedia of Sustainability: China, India, and East and Southeast Asia: Assessing Sustainability* (Great Barrington, MA: Berkshire Publishing), pp.242-245.

Geall, Sam and Sony Pellissery 2012, "Five Year Plans," in: Sam Geall et al (eds) *Berkshire Encyclopedia of Sustainability: China, India, and East and Southeast Asia: Assessing Sustainability* (Great Barrington, MA: Berkshire Publishing), pp.156-160.

Geall, Sam 2013a, "The Everyman's Science," *Solutions*, March-April, pp.18-20.

Geall, Sam 2013b, "China's environmental journalists: a rainbow confusion" in: Sam Geall (ed) *China and the Environment: The Green Revolution.* (London: Zed Books), pp.15-39.

Geall, Sam 2013c, "Clean as a whistleblower," *New Statesman*, 28 June-4 July, p.16.

Geall, Sam and Isabel Hilton 2014, "China: Struggling toward an 'Ecological Civilisation'" *State of the World 2014* (Washington D.C.: Worldwatch Institute). Forthcoming.

Gell, Alfred 1998, "The Technology of Enchantment and the Enchantment of Technology," in: Jeremy Coote and Anthony Shelton (eds) *Anthropology, Art and Aesthetics*. (Oxford: Clarendon Press), pp.40-63.

Geng Dong 2011, "The birdwatching lama of Qinghai," *chinadialogue*, April 15, available at: https://www.chinadialogue.net/article/show/single/en/4235-The-birdwatching-lama-of-Qinghai (Accessed November 13, 2013).

Ginzburg, Carlo 1989, *Clues, Myths and the Historical Method.* (Baltimore: Johns Hopkins University Press.)

Goldman, Michael 2006, “Constructing an Environmental State: Eco-Governmentality and Other Transnational Practices of 'Green' World Bank,” *Social Problems* 48 (4), pp.499-523.

Gong Jing 2011, “China’s tainted rice trail,” *chinadialogue*, April 11, available at: https://www.chinadialogue.net/article/show/single/en/4197-China-s-tainted-rice-trail-1- (Accessed November 9, 2013).

Gou, Hongyang 2010 *Ditan Yinmou* (Low-carbon Plot). Taiyuan: Shanxi Economic Publishers

Guo Ji [translated by David Bandurski] 2009, “Freedom of Speech and the Media’s Responsibility,” *Qiushi,* August 16, available at: http://cmp.hku.hk/2009/08/24/1712/ (Accessed November 13, 2013).

Grabow, Karsten and Christian E. Rieck (eds) 2008, *The Kas Democracy Report: Media and Democracy Volume II.* (Berlin: Konrad Adenauer Stiftung).

Green, Sarah 2005, *Notes from the Balkans: Locating Marginality and Ambiguity on the Greek-Albanian Border*. (Princeton and Oxford: Princeton University Press).

Grey, Francois 2009, “The age of citizen cyberscience,” *CERN Courier*, April, available at: http://cerncourier.com/cws/article/cern/38718 (Accessed November 13, 2013).

Grey, Francois 2012, Opening address to London Citizen Cyberscience Summit, February 16.

Guha, Ramachandra 2000, *Environmentalism: A Global History*. (New York: Longman).

Gusterson, Hugh 1997, “Studying Up Revisited,” *Political and Legal Anthropology Review* 20 (1), pp.114-119.

Hall, Stuart 1980, “Encoding/Decoding” in: Stuart Hall, Dorothy Hobson, Andrew Lowe and Paul Willis (eds), *Culture, Media, Language.* (London: Hutchinson).

Hamilton, Clive 2012, “Utopias in the Anthropocene,” remarks delivered to plenary session of the American Sociological Association, Denver, 17 August.

Hannerz, Ulf 2002, “Among the Foreign Correspondents: Reflections on Anthropological Styles and Audiences,” *Ethnos* 67 (1), pp.57-74.

Harris, Paul G. 2010, “China and Climate Change: From Copenhagen to Cancun,” *Environmental Law Reporter: News & Analysis*, 40 (9) September, pp.10858-10863

Harvey, David 2005, *A Brief History of Neoliberalism*. (Oxford: Oxford University Press).

Hassid, Jonathan 2011, “Four Models of the Fourth Estate: A Typology of Contemporary Chinese Journalists,” *The China Quarterly* 208, pp.813-832.

Hastrup, Kirsten 2005, “Social anthropology. Towards a pragmatic enlightenment?” *Social Anthropology* 13 (2), pp.133–149.

Hastrup, Kirsten 2009, “The Pragmatic Enlightenment: The Role of Radical Interpretation in Anthropology,” Lecture given at Peking University, Beijing, May.

Havel, Vaclav 1994, “The Need for Transcendence in the Postmodern World,” Speech delivered at Independence Hall, Philadelphia, July 4, available at: http://www.worldtrans.org/whole/havelspeech.html (Accessed November 13, 2013).

Hayles, Katherine 1999, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature and Informatics.* (Chicago: University of Chicago Press).

He Gang 2008, “New ministry begins to bark, but still lacks bite,” *chinadialogue*, 18 September, available at: https://www.chinadialogue.net/article/show/single/en/2407 (Accessed on: November 8, 2013).

He Zuoxiu 2013, “Chinese nuclear disaster ‘highly probable’ by 2030,” *chinadialogue,* March 9, available at: https://www.chinadialogue.net/article/show/single/en/5808-Chinese-nuclear-disaster-highly-probable-by-2-3 (Accessed November 17, 2013).

Heggelund, Gørild 2004, *Environment and resettlement politics in China: the Three Gorges Project*. (Aldershot: Ashgate).

Herzfeld, Michael 2004, *The Body Impolitic: Artisans and Artifice in the Global Hierarchy of Value.* (Chicago: University of Chicago Press.)

Hilton, Isabel 2011, “Introduction: The evolving blueprint,” in: Isabel Hilton et al (eds) *China’s Green Revolution: Energy, Environment and the 12th Five Year Plan* (London: chinadialogue), pp. 5–11.

Hilton, Isabel 2013, “The return of civil society” in Sam Geall (ed) *China and the Environment: The Green Revolution* (London: Zed Books) pp.1-15.

Hinton, David 2001, *The Mountain Poems of Hsieh Ling-yun.* (New York: New Directions).

Ho, Peter 2001, “Greening without conflict? Environmentalism, NGOs and civil society in China,” *Development and Change* 32, pp.892-921.

Ho, Peter 2003, “Mao’s war against nature? The Environmental impact of the grain-first campaign in China,” *The China Journal* 50, pp.37-59.

Ho, Peter and Richard Louis Edmonds 2008, *China’s embedded activism: opportunities and constraints of a social movement*. (Oxford: Routledge).

Hoppe, Rob, Anna Wesselink and Rose Cairns 2013, “Lost in the problem: the role of boundary organisations in the governance of climate change” *WIREs Climate Change* 4, pp.283–300.

Houghton, John T. 2004, *Global Warming: The Complete Briefing.* (Cambridge: Cambridge University Press).

Hsu, Jennifer and Reza Hasmath (eds) 2012, *The Chinese Corporatist State: Adaption, survival and resistance*. (London: Routledge).

Hu Angang 2013, “Official publication Hu Angang article: people’s society is superior to civil society,” *Xinhua*, July 19 (in Chinese), available at:

http://news.xinhuanet.com/politics/2013-07/19/c_125031886.htm (Accessed November 8, 2013).

Hu Angang and Liang Jiaochen 2011, "China's green era begins," in: Isabel Hilton et al (eds) *China's Green Revolution: Energy, Environment and the 12th Five Year Plan* (London: chinadialogue), pp.17-211.

Huang Yasheng 1996, "Central-local relations in China during the reform era: the economic and institutional dimensions," *World Development* 24 (4), pp.655-672.

Huang Yasheng 2008, *Capitalism with Chinese Characteristics*. (Cambridge: Cambridge University Press).

Hulme, Mike 2009a, *Why We Disagree about Climate Change.* (Cambridge: Cambridge University Press.)

Hulme, Mike 2009b, "Laboratories' outer limits," *The Guardian*, December 4.

Hulme, Mike 2010, "Cosmopolitan Climates: Hybridity, Foresight and Meaning," *Theory Culture Society* 27, pp.267-276.

Hulme, Mike 2011, "BEST, peer review and public knowledge," *Professor Mike Hulme's site* [Online], available at: http://www.mikehulme.org/2011/10/best-peer-review-and-public-knowledge/ (Accessed November 12, 2013).

Hutchins, Brett and Libby Lester 2006, "Environmental protest and tap-dancing with the media in the information age," *Media Culture Society* 28 (3), pp.433-451.

International Rivers 2011, "China's Government Proposes New Dam-Building Spree," 28 February, available at: http://www.internationalrivers.org/resources/china%E2%80%99s-government-proposes-new-dam-building-spree-3419 (Accessed November 10, 2013).

Ingold, Tim 2000, *The perception of the environment. Essays in livelihood, dwelling and skill*. (London: Routledge).

Ip, Kelly 2013, "Uproar over uranium plant still smolders," *The Standard* (Hong Kong) July 15.

IPCC 2007a, *Climate Change 2007, The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. (Cambridge: Cambridge University Press).

IPCC 2007b, *Climate Change 2007, Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. (Cambridge: Cambridge University Press).

Jacobs, Andrew 2013, "Plans to Harness Chinese River's Power Threaten a Region," *The New York Times*, May 4.

Jasanoff, Sheila 2005, *Designs on Nature: Science and Democracy in Europe and the United States*. (Princeton: Princeton University Press).

Jasanoff, Sheila 2010a, "A New Climate for Society," *Theory Culture Society* 27, pp.233-253.

Jasanoff, Sheila 2010b, "Testing Time for Climate Science," *Science* 328 (5979), pp.695-696.

Jiang Gaoming 2007, "Hard times for China's local environment officials," *chinadialogue*, December 18, available at: http://www.chinadialogue.net/article/show/single/en/1583-Hard-times-for-China-s-local-environment-officials (Accessed on November 8, 2013).

Jing, Jun 1996, *The Temple of Memories*. (Stanford, CA: Stanford University Press).

Jing, Jun 2003, "Environmental Protests in Rural China," in Elizabeth Perry and Mark Selden, (eds) *Chinese Society: Change, Conflict and Resistance* (London: Routledge), pp.205-22.

Johnson, Thomas 2010, "Environmentalism and NIMBYism in China: promoting a rules-based approach to public participation," *Environmental Politics* 19 (3), pp.430-448.

Kee, Edwin 2012, "Float Beijing project helps monitor air quality index in Beijing," *Übergizmo* [Online], October 16, available at: http://www.ubergizmo.com/2012/10/float-beijing-project-helps-monitor-air-quality-index-in-beijing/ (Accessed November 13, 2013).

Kearnes, Matthew, Phil MacNaghten and James Wilsdon 2006, *Governing at the Nanoscale: People, policies and emerging technologies.* (London: Demos).

Keck, Margaret and Kathryn Sikkink 1998, *Activists beyond borders*. (Ithaca: Cornell University Press).

Kristof, Nicholas D 1989, "Shanghai Journal: At the Cutting Edge of China's New Journalism," *The New York Times,* January 16.

Kuelhs, Thom 1996, *Beyond Sovereign Terrority: The Space of Ecopolitics*. (Minneapolis and London: University of Minnesota Press).

Kwok, D.W.Y. 1965. *Scientism In Chinese Thought 1900-1950*. (New Haven: Yale University Press).

Lahsen, Myanna 2005, "Seductive Simulations? Uncertainty Distribution Around Climate Models," *Social Studies of Science* 35:6, pp.895–922.

Latham, Kevin 2009, "Media, the Olympics and the Search for the 'Real China,'" *The China Quarterly* 197, pp.25–43.

Latour, Bruno 1993, *We Have Never Been Modern*. (Cambridge, MA: Harvard University Press).

Latour, Bruno 2004, "Whose Cosmos, Which Cosmopolitics? Comments on the Peace Terms of Ulrich Beck," *Common Knowledge* 10 (3), pp.450-462.

Latour, Bruno 2008, "'It's the Development, Stupid!' or How to Modernize Modernization?" in J. Proctor (ed.) *Postenvironmentalism*. (Cambridge, MA: MIT Press).

Leach, Melissa 2013, "Democracy in the Anthropocene? Science and Sustainable Development Goals at the UN," *The Huffington Post*, March 27, available at: http://www.huffingtonpost.co.uk/Melissa-Leach/democracy-in-the-anthropocene_b_2966341.html (Accessed November 13, 2013).

Leach, Melissa, Ian Scoones and Brian Wynne 2005. *Science and Citizens: Globalization and the Challenge of Engagement*. (London: Zed Books).

Leach, Melissa, Ian Scoones and Andrew Stirling 2010. *Dynamic Sustainabilities* (London: Earthscan).

Lee, Ching Kwan and Yang Guobin (eds) 2007, *Re-envisioning the Chinese Revolution: The Politics and Poetics of Collective Memories in Reform China.* (Washington D.C.: The Woodrow Wilson Center Press and Stanford University Press.)

Lei Jie and Alan Walker 2013, "The Big Society in China: A Failed Experiment," *Social Policy and Society* 12, pp.17-30.

Leiserowitz, Anthony A., Edward W. Maibach, Connie Roser-Renouf, Nicholas Smith and Erica Dawson 2012, "Climategate, Public Opinion, and the Loss of Trust," *American Behavioral Scientist* 0002764212458272.

Leiserowitz, Anthony 2004, "Before and after The Day After Tomorrow: A US study of climate change risk perception," *Environment*, 46 (9), pp.22-37.

Leopold, Luna B. (ed) 1993, *Round River; from the journals of Aldo Leopold*. (Oxford: Oxford University Press).

Lewandowsky, Stephan, Klaus Oberauer and Gilles E. Gignac 2013, "NASA Faked the Moon Landing – Therefore, (Climate) Science Is a Hoax: An Anatomy of the Motivated Rejection of Science," *Psychological Science*, 0958797612457686

Lewis, Joanna I. 2011, "Building a national wind turbine industry: experiences from China, India and South Korea," *International Journal of Technology and Globalisation* 5 (3/4), pp.281-305.

Li Jing 2013, "Zhangzhou chemical plant blast highlights safety fears," *South China Morning Post*, 30 July.

Li, Lianjiang and Kevin J O'Brien 2006, *Rightful Resistance in Rural China.* (Cambridge: Cambridge University Press).

Li, Minqi 2008, *The Rise of China and the Demise of the Capitalist World Economy*. (London: Pluto).

Lifton, Robert Jay 1968, *Revolutionary Immortality: Mao Tse-tung and the Chinese Cultural Revolution*. (London: Weidenfeld & Nicolson).

Lindtner, Silvia 2012, "Remaking Creativity & Innovation: China's nascent DIY maker & hackerspace community," Paper presented at *New Media and Cultural Transformation: Film, TV, Game, and Digital Communication*, School of Film-TV, Shanghai University New York University Shanghai Center, December 7-9.

Link, Perry 1992, *Evening Chats in Beijing.* (New York: WW Norton & Company).

Link, Perry 2002, "China: The Anaconda in the Chandelier," *New York Review of Books*, 49 (6).

Linnér, B. and Roger A. Pielke, Jr. 2013, "More authoritarian politics is not the solution to climate change," *Dagens Nyheter*, September 27.

Litzinger, Ralph 2006, "Contested Sovereignties and the Critical Ecosystem Partnership Fund," *Political and Legal Anthropology Review* 29 (1), pp.66-87.

Litzinger, Ralph 2007, "In Search of the Grassroots: Hydroelectric Politics in Northwest Yunnan," in: Elizabeth J Perry and Merle Goldman (eds) *Grassroots Political Reform in Contemporary China.* (Cambridge MA: Harvard University Press), pp.282-300.

Liu Binyan 1990, *A Higher Kind of Loyalty*. (New York: Pantheon Books).

Liu Binyan and Perry Link 2006, *Two Kinds of Truth*. (Bloomington: Indiana University Press).

Liu Cixin 2008, *Three Body*. (Chongqing: Chongqing Press).

Liu Jianqiang 2008, "One Chinese villager's view of climate change," *chinadialogue*, May 7, available at: https://www.chinadialogue.net/article/show/single/en/1976-One-Chinese-villager-s-view-of-climate-change (Accessed November 11, 2013).

Liu Jianqiang 2013, "Defending Tiger Leaping Gorge," in: Sam Geall (ed), *China and the Environment: The Green Revolution.* (London: Zed Books), pp.203-235.

Lora-Wainwright, Anna 2013, "The Inadequate Life: Rural Industrial Pollution and Lay Epidemiology in China," *The China Quarterly* 214, pp.302-320.

Lovelock, James E. 1972, "Gaia as seen through the atmosphere," *Atmospheric Environment* 6 (8), pp.579–580.

Lynas, Mark 2009, "How do I know China wrecked the Copenhagen deal? I was in the room" *The Guardian,* December 22, available at: http://www.guardian.co.uk/environment/2009/dec/22/copenhagen-climate-change-mark-lynas (Accessed November 12, 2013).

Lynas, Mark 2011, *The God Species*. (London: Fourth Estate).

Macey, David 2000, *Dictionary of Critical Theory*. (London: Penguin).

Mackenzie, Donald 2008, *An Engine, Not a Camera: How Financial Models Shape Markets*. (Cambridge, MA: MIT Press).

MacKinnon, Rebecca 2009, "My chat with Anti-CNN.com," *RConversation* [Online], 14 April, available at: http://rconversation.blogs.com/rconversation/2009/04/on-monday-afternoon-i-did-an-online-chat-with-these-patriotic-young-people-who-run-anti-cnn-a-website-launched-in-the-wake.html (Accessed November 13, 2013).

MacKinnon, Rebecca 2012, *The Consent of the Networked*. (New York: Basic Books).

MacQuillan, Dan 2013, "What is Critical Citizen Science? A Dialogue (Part 1)," *InternetArtizans* [Online], March 29, available at: http://www.internetartizans.co.uk/criticalcitizenscience1 (Accessed November 13, 2013).

Makley, Charlene 2009, "Anthropology and the Anaconda: China post-2008," *Anthropology News*, April.

Mao Zedong 2007 [1937], *On Practice and Contradiction*. (London: Verso).

Massey, Doreen 2005, *For Space*. (London: Sage).

Matthew, Richard 2013, "Climate change and water security in the Himalayan region," *Asia Policy* 16, pp.39-44.

McGranahan, Gordon, Deborah Balk and Bridget Anderson 2007, "The rising tide: assessing the risks of climate change and human settlements in low elevation coastal zones," *Environment and Urbanization* 19 (1), pp.17-37.

McLaughlin, Kathleen 2013, "Chinese countryside facing a 'grim' environmental situation," *The Telegraph*, June 5.

McNally, A., Darrin Magee and Aaron T. Wolf 2009, "Hydropower and sustainability: Resilience and vulnerability in China's powersheds," *Journal of Environmental Management* 90, pp.286–293

Mehra, Malini 2010, "Copenhagen – the Munich of our times?" *BBC News*, 2 February, available at: http://news.bbc.co.uk/1/hi/8490935.stm (Accessed November 7, 2013)

Meng Dengke 2009, "China's waste 'incinerationists': experts or businessmen?" *Southern Weekend*, December 3. Republished as "The fire-starters," *chinadialogue*, May 14, available here: https://www.chinadialogue.net/article/show/single/en/3619-The-fire-starters (Accessed November 12, 2013).

Meng Si 2012, "An insight into the green vocabulary of the Chinese communist party," *chinadialogue* 15 November, available at: https://www.chinadialogue.net/article/show/single/en/5339 (Accessed November 8, 2013).

Mertha, Andrew 2008, *China's Water Warriors: Citizen Action and Policy Change*. (Ithaca, NY: Cornell University Press).

Miller, Hyman L. 1996, *Science and Dissent in Post-Mao China: The Politics of Knowledge*. (Seattle: University of Washington Press).

Ministry of Environmental Protection, The People's Republic of China, *2012 Report on the State of the Environment*, 4 June 2013.

Moser, David 2011, "Thoughts on *River Elegy*, June 1988-June 2011," *The China Beat* [Online], available at: http://www.thechinabeat.org/?p=3607 (Accessed November 11, 2013).

Moser, Susanne and Lisa Dilling (eds) 2007, *Creating a climate for change: communicating climate change and facilitating social change.* (Cambridge: Cambridge University Press).

Mueggler, Erik 2001, *The Age of Wild Ghosts: Memory, Violence, and Place in Southwest China*. (Berkeley, CA: University of California Press).

Muldavin, Joshua 2000, "The paradoxes of environmental policy and resource management in reform-era China," *Economic Geography* 76 (3), pp.244-271.

Muldavin, Joshua 2008, "The Politics of Transition: Critical Political Ecology, Classical Economics, and Ecological Modernization Theory in China," in: *The Political Geography Handbook*, K. R. Cox, M. Low, and J. Robinson (eds) (London: Sage), pp. 247-262.

Munro, Robin and George Black 1993, *Black Hands of Beijing: Lives of Defiance in China's Democracy Movement*. (New York: John Wiley and Sons).

National Development and Reform Commission 2007, *China's National Climate Change Programme*, available at: http://en.ndrc.gov.cn/newsrelease/P020070604561191006823.pdf (Accessed November 8, 2013).

National Research Council 2012, *Himalayan Glaciers: Climate Change, Water Resources, and Water Security*. (Washington, DC: The National Academies Press).

Ong, Lynette H. 2012, "The apparent 'paradox' in China's climate policies: weak international commitment on emissions reduction and aggressive renewable energy policy," *Asian Survey* 52 (6), pp.1138-1160.

Oreskes, Naomi 2004, "Beyond the ivory tower: the scientific consensus on climate change," *Science* 306 (5702), December 3, p.1686.

Oreskes, Naomi 2007, "The Scientific Consensus on Climate Change: How Do We Know We're Not Wrong?" in: Joseph F. C. Dimento and Pamela Doughman (eds) *Climate Change: What It Means for Us, Our Children, and Our Grandchildren* (Cambridge, MA: MIT Press), pp.65-99.

Oreskes, Naomi and Erik M. Conway 2010, *Merchants of doubt*. (New York: Bloomsbury Publishing).

Orlik, Tom 2012, "Unrest Grows as Economy Booms," *Wall Street Journal*, September 26.

Osborn, Tim and Thomas Kleinen 2008, "The thermohaline circulation," *Climatic Research Unit* [Online], available at: http://www.cru.uea.ac.uk/documents/421974/1295957/Info+sheet+%237.pdf/320eba6e-d384-497d-b4fc-2d2c187f805e (Accessed November 13, 2013).

Ostrom, Elinor 2009, "A General Framework for Analyzing Sustainability of Social-Ecological Systems," *Science 325 (5939), pp. 419-422.*

Paasche, Øyvind 2010, "After climategate: forward to reality," *openDemocracy* [Online], July 14, available at: http://www.opendemocracy.net/%C3%B8yvind-paasche/after-climategate-forward-to-reality (Accessed November 12, 2013).

Painter, James 2010, *Summoned by Science: Reporting Climate Change at Copenhagen and Beyond*. (Oxford: Reuters Institute of Journalism).

PBL Netherlands Environmental Assessment Agency 2007, "China now no.1 in CO2 emissions; USA in second position." Available at: http://www.pbl.nl/en/dossiers/Climatechange/moreinfo/Chinanowno1inCO2emissionsUSAinsecondposition (Accessed November 7, 2013)

PBL Netherlands Environmental Assessment Agency 2012, "Trends in global CO2 emissions; 2012 Report," available at: http://www.pbl.nl/en/publications/2012/trends-in-global-co2-emissions-2012-report (Accessed November 7, 2013).

People's Daily 2005, "After 30 Years, Secrets, Lessons of China's Worst Dams Burst Accident Surface," October 1.

Pew Research Center 2013, "Environmental Concerns on the Rise in China," 19 September, available at: http://www.pewglobal.org/2013/09/19/environmental-concerns-on-the-rise-in-china/ (Accessed November 7, 2013).

Piao, S., P. Ciais, Y. Huang, Z. Shen, S. Peng, J. Li, L. Zhou, H. Liu, Y. Ma, Y. Ding P. Friedlingstein, C. Liu, K. Tan, Y. Yu, T. Zhang and J. Fang 2010, "The impacts of climate change on water resources and agriculture in China," *Nature* 467, pp.43–51.

Pielke, Jr., Roger 2012a, "Post-Normal Science in a German Landscape," *Nature and Culture* 7 (2) Summer, pp.196–212.

Pielke, Jr., Roger 2012b, "Technology was the key factor in saving the ozone layer," *chinadialogue*, June 11, available at: https://www.chinadialogue.net/article/show/single/en/5297-Technology-was-the-key-factor-in-saving-the-ozone-layer-not-governments (Accessed November 13, 2013).

Pils, Eva 2012, “Introduction: Discussing “civil society” and “liberal communities” in China,” *China Perspectives* [Online], 1 October, available at: http://chinaperspectives.revues.org/5927 (Accessed on November 8, 2013).

Pomeranz, Kenneth 2009, “The Great Himalayan Watershed: Agrarian Crisis, Mega-Dams and the Environment,” *New Left Review*, 58, July/Aug.

Pomeranz, Kenneth 2013, “Asia’s Unstable Water Tower: The Politics, Economics, and Ecology of Himalayan Water Projects,” *Asia Policy* 16, pp.4-10.

Prins, Gwyn and Steve Rayner 2007, *The Wrong Trousers: Radically Rethinking Climate Policy*. Joint Discussion Paper of the James Martin Institute for Science and Civilization, University of Oxford and the MacKinder Centre for the Study of Long-Wave Events, London School of Economics.

Ramsar 1971, “Convention on Wetlands of International Importance especially as Waterfowl Habitat,” *UN Treaty Series* 14583, February 2 (Ramsar, Iran).

Rayner, Steve 2009, “Foreword” in Mike Hulme 2009, *Why We Disagree about Climate Change* (Cambridge: Cambridge University Press), pp.xxi-xxiv.

Riles, Annelise (ed) 2006, *Documents: Artifacts of Modern Knowledge.* (Ann Arbor: University of Michigan Press.)

Rio Declaration on Environment and Development 1992, United Nations Environment Programme, June 14, available at: http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=78&ArticleID=1163 (Accessed November 9, 2013).

Rittel, Horst and Melvin Webber 1973, “Dilemmas in a General Theory of Planning,” *Policy Sciences* 4, pp.155-169.

Rockström, Johan, Will Steffen, Kevin Noone, Åsa Persson, F. Stuart Chapin, III, Eric F. Lambin, Timothy M. Lenton, Marten Scheffer, Carl Folke, Hans Joachim Schellnhuber, Björn Nykvist, Cynthia A. de Wit, Terry Hughes, Sander van der Leeuw, Henning Rodhe, Sverker Sörlin, Peter K. Snyder, Robert Costanza, Uno

Svedin, Malin Falkenmark, Louise Karlberg, Robert W. Corell, Victoria J. Fabry, James Hansen, Brian Walker, Diana Liverman, Katherine Richardson, Paul Crutzen and Jonathan A. Foley 2009, "A safe operating space for humanity," *Nature* 461, September 24, pp.472-475.

Robbins, Paul 2004, *Political Ecology: A Critical Introduction* (Malden, MA: Blackwell).

Rosen, Stanley 2009, "Contemporary Chinese Youth and the State," *The Journal of Asian Studies* 68 (2), pp.359–369.

Rowland, Katherine 2012, "Citizen science goes 'extreme,'" *Nature*, February 17.

Sam, Cedric 2011, "Guidance of public opinion," *Media Dictionary, China Media Project*, available at: http://cmp.hku.hk/2011/10/05/423/ (Accessed November 9, 2013).

Sarewitz, Daniel 2011, "Does climate change knowledge really matter?" *WIREs: Climate Change* 2, pp.475–481.

Sarre, Philip and Petr Jehlicka 2007, "Environmental movements in space-time: the Czech and Slovak republics from Stalinism to post-socialism," *Transactions of the Institute of British Geographers* 32 (3), pp.346–362.

Schröder, Patrick 2011, Civil *Climate Change Action in China – More than Meets the Eye.* (Essen: German Asia Foundation).

Schröder, Miriam 2012, *Local Climate Governance in China: Hybrid Actors and Market Mechanisms*. (Basingstoke: Palgrave Macmillan).

Scott, James C 1998, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed.* New Haven, CT: Yale University Press.

Seligsohn 2009, “China’s State Council Unveils 40-45% Carbon Intensity Target,” *World Resources Institute*, November 26, available at: http://www.wri.org/blog/china%E2%80%99s-state-council-unveils-40-45-carbon-intensity-target (Accessed on November 8, 2013).

Shanhan Mike 2007, “Talking about a revolution: climate change and the media,” *IIED Briefing*, December, available at: http://pubs.iied.org/pdfs/17029IIED.pdf (Accessed November 13, 2013).

Shanahan, Mike 2009, “Time to Adapt? Media Coverage of Climate Change in Nonindustrialised Countries,” in: Tammy Boyce and Justin Lewis (eds) *Climate Change and the Media.* (Oxford: Peter Lang Publishing), pp.145-157.

Shanahan, Mike 2011, “Why the media matters in a warming world: A guide for policymakers in the global South,” *Climate Change Media Partnership*, available at: http://pubs.iied.org/pdfs/G03119.pdf

Shapiro, Judith 2001, *Mao’s War against Nature*. (Cambridge: Cambridge University Press).

Shapiro, Judith 2012, *China’s Environmental Challenges.* (Cambridge: Polity).

Sharma, Kalpana 2010, “Essay on Environment Journalism,” in: Keya Acharya and Frederick Noronha (eds), *The green pen: Essays on environmental journalism from India and South Asia.* (New Delhi: Sage Publications), pp.45-48.

Shou, Zhonghao 1999, “The Haicheng Earthquake and its Prediction,” *Science and Utopia* 65 (November), p.34.

Shui Fu 1998, “A Profile of Dams in China,” in: Dai Qing (ed) *The River Dragon has Come!* (Armonk, NY: M.E. Sharpe).

Simonov, Eugene 2008, “Amur Heilong River Basin,” [Online], available at: http://amur-heilong.net/http/04_econet_pas/0420DIPA.html (Accessed November 12, 2013).

Sinclair, Upton 2006 [1906], *The Jungle*. (New York: Modern Library).

Smith, Joe 2005, “Dangerous news: media decision making about climate change risk,” *Risk Analysis* 25, pp.1471-1482.

Spiegel 2005, “Interview with China's Deputy Minister of the Environment: "The Chinese Miracle Will End Soon,” March 7, available at: http://www.spiegel.de/international/spiegel/spiegel-interview-with-china-s-deputy-minister-of-the-environment-the-chinese-miracle-will-end-soon-a-345694.html (Accessed on: November 8, 2013).

Spires, Anthony J. 2012, “Lessons from Abroad: Foreign Influences on China’s Emerging Civil Society,” *The China Journal* (68), pp.125-146.

Stalin, Joseph 1938, *Dialectical and Historical Materialism*. (Marxists Internet Archive), available at: http://www.marxists.org/reference/archive/stalin/works/1938/09.htm (Accessed November 10, 2013).

State Council 2008, *Regulations of the People’s Republic of China on Open Government Information,* available at http://www.law.yale.edu/documents/pdf/Intellectual_Life/Ch_OGI_Regualtions_Eng_Final_051607.pdf (Accessed November 10, 2013).

State Environmental Protection Administration of China 2008, *Measures on Open Environmental Information (for Trial Implementation)*, available at http://www.epa.gov/ogc/china/open_environmental.pdf (Accessed on November 10, 2013).

Statt, Nick 2013, “Drones in China deliver packages, even a birthday cake,” *CNet* [Online], September 5, available at: http://news.cnet.com/8301-11386_3-57601531-76/drones-in-china-deliver-packages-even-a-birthday-cake/ (Accessed November 13, 2013).

Steinmuller, Hans 2011, “The state of irony in China,” *Critique of Anthropology* 31, pp.21-42.

Stengers, Isabelle 1996, *Cosmopolitiques, vol. 1, La guerre des sciences.* (Paris: La Découverte; Les Empêcheurs de penser en rond).

Stirling, Andrew 2010, "From Enlightenment to Enablement: Opening up Choices for Innovation," Augusto Lopez-Claros (ed) *The innovation for development report: 2009–2010.* (Basingstoke: Palgrave Macmilan), pp.199–210.

Stirling, Andrew 2013, "The greens are far from finished," *Guardian*, 30 July. Available at: http://www.theguardian.com/science/political-science/2013/jul/30/greens-science-policy (Accessed November 7, 2013).

Stivers, Robert L. 1976, *The Sustainable Society: Ethics and Economic Growth.* (Louisville, KY: Westminster John Knox).

Stockman, Norman 2000, *Understanding Chinese Society*. (Cambridge: Polity).

Stone, Richard 2010, "Severe Drought Puts Spotlight on Chinese Dams," *Science* 327 (5971), March 12, p.1311.

Strathern, Marilyn 1997, "Partners and Consumers: Making Relations Visible," in: Alan D. Schrift (ed) *The Logic of the Gift*. (London: Routledge), pp.292-311.

Strathern, Marilyn 2006, "Bullet-Proofing: A Tale from the United Kingdom," in: Annelise Riles (ed) *Documents: Artifacts of Modern Knowledge.* (Ann Arbor: University of Michigan Press), pp.181-205.

Sun Liping [translated by Xujun Eberlein] 2009, "The biggest threat is not social unrest but societal breakdown," *Inside Out China* [Online], available at: http://insideoutchina.blogspot.co.uk/2009/03/biggest-threat-is-not-social-unrest-but.html (Accessed November 12, 2013).

Su Xiaokang 2006, "Unnatural Exile: In Memory of Liu Binyan," *China Rights Forum* 1.

Sun Yanfei and Dingxin Zhao 2008, "Environmental Campaigns," in: Kevin J O'Brien (ed) *Popular Protest in China*. (Cambridge, MA: Harvard University Press), pp.144-163.

Suttmeier, Richard P. 2008, “The ‘Sixth Modernisation’? China, Safety and the Management of Risks,” *Asia Policy* 13, pp.129-46.

Svensson, Marina 2012, “Media and Civil Society in China: Community building and networking among investigative journalists and beyond,” *China Perspectives*, October 1, pp.19-28.

Swyngedouw, Erik 2010, “Apocalypse Forever? Post-political Populism and the Spectre of Climate Change,” *Theory Culture Society* 27, pp.213-232.

Tang Hao 2013, “China’s ‘nimby’ protests sign of unequal society,” *chinadialogue*, 29 May, available at: https://www.chinadialogue.net/article/show/single/en/6051-China-s-nimby-protests-sign-of-unequal-society (Accessed on November 8, 2013).

Tilt, Bryan 2010, *The Struggle for Sustainability in Rural China: Environmental Values and Civil Society*. (New York: Columbia University Press).

Tilt, Bryan and Qing Xiao 2010, “Media coverage of environmental pollution in the People’s Republic of China: responsibility, cover-up and state control,” *Media, Culture & Society* 32 (2), pp.225–245.

Time 1969, “The Flaming Cuyahoga,” *Time Magazine*, August 1.

Tobias, Ed 2011, “Using Twitter and other social media platforms to provide situational awareness during an incident,” *Journal of Business and Continuity Emergency Planning* 5 (3), pp.208-23.

Tolan, Sandy 2007, “Coverage of climate change in Chinese media,” *Human Development Report 2007 Occasional Paper.* (United Nations Development Programme).

Tsing, Anna Lowenhaupt 2005, *Friction: An Ethnography of Global Connection.* (Princeton, NJ: Princeton University Press).

Tyfield, David and John Urry 2009, “Cosmopolitan China? Lessons from international collaboration in low-carbon innovation,” *The British Journal of Sociology* 60 (4), pp.793-812.

United Nations Conference on Sustainable Development (UNCSD) 2012, "The History of Sustainable Development in the United Nations," available at: http://www.uncsd2012.org/history.html (Accessed November 8, 2013).

United Nations Environment Programme (UNEP) 2010, *Guidelines for the development of national legislation on access to information, public participation and access to justice in environmental matters*, available at: http://www.unep.org/civil-society/Portals/24105/documents/Guidelines/GUIDELINES_TO_ACCESS_TO_ENV_INFO_2.pdf (Accessed November 9, 2013).

Urry, John 2011, *Climate Change and Society* (Cambridge: Polity).

Van Kranenburg, Rob 2007, *The Internet of Things. A critique of ambient technology and the all-seeing network of RFID*. (Amsterdam: Institute of Network Cultures).

Van Rooij, Benjamin 2010, "The People vs. Pollution: Understanding Citizen Action Against Pollution in China," *Journal of Contemporary China* 19 (63), pp.55-77.

Viveiros de Castro, Eduardo Batalha 2004, "Exchanging Perspectives: The Transformation of Objects into Subjects in Amerindian Ontologies," *Common Knowledge* 10 (3), pp.463-484.

Vovk, Victor and Thoma s Prugh 2003, "Red Past. Green Future?" *Worldwatch* July/August, pp.12-23.

Walker, Peter A. 2005, "Political ecology: where is the ecology?" *Progress in Human Geography* 29 (1), pp.73-82.

Wang, Alex 2007, "The Role of Law in Environmental Protection in China," *Vermont Journal of Environmental Law* 8, pp.185-223.

Wang, Alex 2013, "The Search for Sustainable Legitimacy: Environmental Law and Bureaucracy in China," *Harvard Environmental Law Review* 37, pp.365-440.

Wang, Jin 2010, "China's green laws are useless," *chinadialogue*, 23 September, available at: https://www.chinadialogue.net/article/show/single/en/3831--China-s-green-laws-are-useless- (Accessed on November 8, 2013).

Wang, Lixiong 1991, *Yellow Peril* repub. in English 2008, *China Tidal Wave*, trans. by Anton Platero. (Folkestone: Global Oriental).

Wang, Shaoguang and Hu Angang 2001, *The Chinese Economy in Crisis: State Capacity and Tax Reform.* (Armonk, NY: M.E. Sharpe).

Wang, Tao and Jim Watson 2007, "Who Owns China's Carbon Emissions?" *Tyndall Briefing Note* 23.

Watts, Jonathan 2009, "China's green champion sidelined," *The Guardian*. March 12.

Watts, Jonathan 2010, *When a Billion Chinese Jump*. (London: Faber and Faber).

Watts, Michael J. 2002, "Green Capitalism, Green Governmentality". *American Behavioral Scientist* 45 (9), pp.1313-1317.

Weller, Robert P. 2006, *Discovering Nature: Globalization and Environmental Culture in China and Taiwan*. (Cambridge: Cambridge University Press).

Wen Jiabao 2008, "Strengthen International Technology Cooperation and Address Climate Change Actively," Speech at the Beijing High-level Conference on Climate Change: Technology Development and Technology Transfer, November 7, available at: http://www.ccchina.gov.cn/WebSite/CCChina/UpFile/File367.pdf (Accessed November 13, 2013).

Whyte, Martin K. 1986, "Who hates bureaucracy? A Chinese puzzle," *Center for Research on Social Organization Working Paper* 337.

Wilsdon, James and James Keeley 2007, *China: The next science superpower?* (London: Demos).

Woeser 2008, *Tibet's True Heart: Selected Poems.* (Ardsley NY: Ragged Banner).

Wolf, Eric 1972, "Ownership and Political Ecology," *Anthropological Quarterly* 45 (3), pp. 201-205.

World Commission on Environment and Development (WCED) 1987, *Our Common Future: The World Commission on Environment and Development.* (Oxford: Oxford University Press.)

World Nuclear Association, "Nuclear power in China," [Online], updated November 2013, available at: http://www.world-nuclear.org/info/Country-Profiles/Countries-A-F/China--Nuclear-Power/ (Accessed November 17, 2013).

Wu, Fengshi and Kin-Man Chan 2012, "Graduated Control and Beyond: The Evolving Government-NGO Relations," *China Perspectives* 3, pp.9-17.

Wynne, Brian 2005, "Risk as globalizing 'democratic' discourse? Framing subjects and citizens," in: Melissa Leach, Ian Scoones and Brian Wynne 2005. *Science and Citizens: Globalization and the Challenge of Engagement*. (London: Zed Books), pp.66-82.

Wynne, Brian 2010, "When doubt becomes a weapon," *Nature* 466, July 22, pp. 441–442.

Xiao Qiang 2007, "Southern Metropolis' Headline and 'Edge Ball'". *China Digital Times,*" November 21, available at http://chinadigitaltimes.net/2007/11/southern-metropolis-headline-and-edge-ball/ (Accessed November 9, 2013).

Xinhua 2007a, "New rules issued to require government transparency," *China Daily*, April 24.

Xinhua 2007b, "China warns of environmental 'catastrophe' from Three Gorges Dam," *People's Daily*, September 26.

Xinhua 2008, "North China's largest freshwater getting smaller," *China Daily,* June 24.

Xinhua 2009, "Premier Wen at Copenhagen conference," *China Daily*, December 25.

Xinhua 2012, "PM2.5 in air quality standards, positive response to net campaign," *People's Daily*, March 1.

Yan Yunxiang 2010, *The Individualization of Chinese Society*. (London: Bloomsbury Academic).

Yang Chuanmin 2011, "Zijin's poisoned legacy," *chinadialogue*, April 13, available at: https://www.chinadialogue.net/article/show/single/en/4229-Zijin-s-poisoned-legacy (Accessed on November 9, 2013).

Yang Guobin 2010, "Brokering environment and health in China: Issue entrepreneurs of the public sphere," *Journal of Contemporary China* 19 (63), pp.101-119.

Yang Guobin 2013, "Chinese environmental protests in the age of the internet". Talk at School of Oriental and African Studies, London, June 13.

Yang Jisheng 2012, *Tombstone: The Untold Story of Mao's Great Famine*. (London: Allen Lane).

Ye, Liming, Huajun Tang, Wenbin Wu, Peng Yang, Gerald C. Nelson, Daniel Mason-D'Croz, and Amanda Palazzo 2013, "Chinese Food Security and Climate Change: Agriculture Futures," *Economics Discussion Papers* (2), Kiel Institute for the World Economy.

Yearley, Steven 2006, "How Many 'Ends' of Nature: Making Sociological and Phenomenological Sense of the End of Nature," *Nature and Culture* 1 (1), pp.10–21.

Yu, Mok Chiu and J. Fran Harrison 1990, *Voices from Tiananmen Square: Beijing Spring and the Democracy Movement*. (Montreal: Black Rose Books).

Zhan Jiang 2011, "Environmental Journalism in China," in: Susan Shirk (ed) *Changing Media, Changing China.* (Oxford: Oxford University Press), pp.115-127.

Zhang, Jianyun, Wang Guoqing, Yang Yang, He Ruimin and Liu Jiufu 2009, "Impact of climate change on water security in China," *Advances in Climate Change Research* 5, p.34-40.

Zhang, Joy Y and Michael Barr 2013, *Green Politics in China: Environmental Governance and State-Society Relations.* (London: Pluto).

Zhang, Lei, Arthur P. J. Mol, Guizhen He and Yonglong Lu 2010, "An implementation assessment of China's Environmental Information Disclosure Decree," *Journal of Environmental Sciences* 22 (10), pp.1649–1656.

Zhang Ruidan and Li Hujun 2009, "Melting Third Pole," *Caijing* 221, September 29.

Zhao, J. 1993, *Social forestry in Yunnan*. (Kunming: Science and Technology Press of Yunnan).

Zhao, Michael 2012, *China Air Daily* [Online], available at: http://www.chinaairdaily.com (Accessed November 10, 2013).

Zheng Baowei 2013, opening remarks at First International Conference on Climate Change Communication at Renmin University, October 12.

Zimmerer, Karl S. 1996, "Discourses on soil loss in Bolivia: Sustainability and the search for the 'socioenvironmental middle ground,'" in: Richard Peet and Michael Watts (eds) *Liberation Ecologies: Environment, Development, Social Movements.* (London: Routledge) pp.110-124.

Zimmerer, Karl S. 2000, "The Reworking of Conservation Geographies: Nonequilibrium Landscapes and Nature-Society Hybrids," *Annals of the Association of American Geographers* 90 (2), pp. 356-369.

Žižek, Slavoj 1989, *The Sublime Object of Ideology.* London: Verso.